

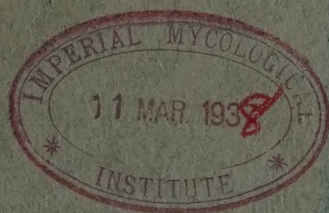
Special Issue of the "Fruit World"

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# The FRUIT WORLD ANNUAL

A BOOK OF DAILY REFERENCE  
For Growers of Apples, Pears, Vine, Citrus and Stone Fruits – Exporters, Marketgrowers, etc.

**JANUARY, 1938**



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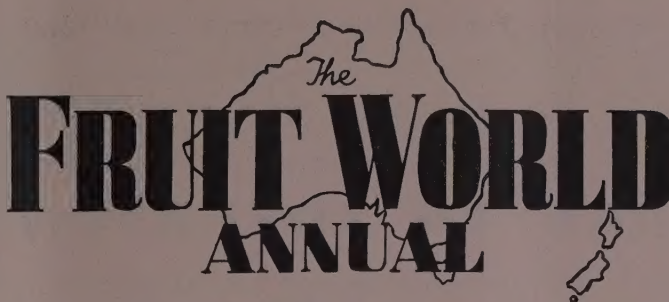
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## Editorial

**M**ANY CHANGES have taken place since the publication of the 1937 "Fruit World Annual." New factors have entered into the national economy. Some well-known faces among the stalwarts of the fruit industry are with us no more.

Yet the world is forever young. The primary producer—and in particular the fruitgrower—sees in the ever-changing face of nature the application of eternal principles and each springtime witnesses the promise of unceasing renewal of life.

With her favorable soil and climatic conditions, Australia is producing fruit which has no superior in any part of the world. The local markets are more than amply supplied, hence, the importance of the full development of export markets.

The Ottawa Agreements were designed to give a measure of stability to Empire producers, in the sending of their goods to the United Kingdom.

Recently there were heartburnings because of the publication of the news of the projected trade arrangements between Great Britain and the United States of America, in which were involved, it was anticipated, certain modifications of the Ottawa Agreements.

Assurances have been forthcoming, however, that the spirit of the Ottawa Agreements will be respected. In fact, when opening the Annual Conference of the Australian Apple and Pear Export Council, the then Assistant Minister for Commerce, Mr. Thorby, went so far as to suggest that in the reviewing of the Ottawa Agreements the Apple and Pear grower would be even better off, as regards preferences, than before.

Details are being worked out in connection with the canned fruit and dried fruits interests, and it is probable that representatives of the several sections of the fruit industry will attend the plenary sessions to be held in London about May.

\* \* \* \*

**W**HILE THE ADVERTISING of dried and canned fruits has for some years been an accepted practice, it was only last season that a concerted effort was made in regard to publicity for Apples and Pears.

The effort was well worth while, and considerable good resulted. A firm foundation has been laid for future activity. The funds were provided in the first place by

the Commonwealth Government providing up to £5,000, at the rate of £1 for £1 with contributions from State Governments and others. The action of the Governments in this connection is greatly esteemed.

High praise is due to the Orchardists and Fruit Cool Stores Association for their contribution of £1,000 to the funds—in the supplying of which a further sum of equal amount became payable from the Commonwealth Government.

The original request from the industry was for the collection by the Government of a small levy per case on all the Apples and Pears sold in Australia, and for the money to be handed back to the industry for educational publicity purposes. However, the Government did not accede to this request at the time, but instead provided a grant on the lines above indicated.

The request has again gone forward for the collection of the small levy on Apples and Pears sold in Australia—exempting Pears for canning—and it is earnestly hoped that the Government will agree to the proposal. By this means it will be possible to conduct educational propaganda to increase the consumption of fruit, thus assisting an important primary industry, and at the same time benefiting the health of the people.

The need was never greater. As before, the emphasis would be on publicity for Apples as the heavy crops of this fruit are again causing embarrassment. The Australian crop of Apples in 1937-38 will be a heavy one. After providing for all export avenues, the quantity left behind is greater, at the moment, than the normal consumption.

Market stimulus is possible by educational propaganda, acting in conjunction with the Medical and Dental profession, Nutrition Committees, Health Departments, and all the organisations which are working for the improved health of the community.

Coincident with the programme of educational publicity to increase the consumption of fruit, Grading Committees have been at work to define improved standards of the fruit to be permitted to be sold, with recommendations for limited period only, for the sale of the fourth (domestic) grade and for the reduction of varieties.

\* \* \* \*

**T**HE BEST THANKS of the industry are due to research workers, who are forever seeking improved methods of pest control, so as to reduce production costs, to the Federal and State Governments for sympathetic consideration to requests for assistance at difficult periods, and to those men who, by their diligence and far-

sightedness, have demonstrated their capacity to capably lead the industry. In all the branches of the fruit industry these men have been found, and a tribute of appreciation is paid to them.

So we go forward into 1938. There are problems, no doubt, but none are insuperable, and the hope is expressed

that the year upon which we have just entered will witness increasing co-operation among the producers and business men associated with the industry, for the bringing about of improvements, which will be for the benefit of the present and the rising generation.

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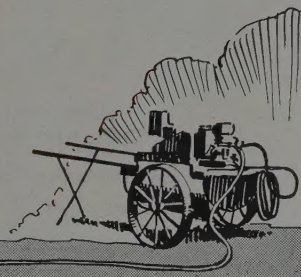
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# INSECT PESTS and FUNGOUS DISEASES

***Latest Control Methods  
Described and Illustrated***



**F**OR the production of high quality fruit, many factors are involved—aspect, soil, stocks, varieties, drainage, cultivation, pruning, irrigation, orchard hygiene, manuring, spraying, etc.

It is with particular reference to the very important matter of spraying that this page, and those which follow, have been compiled.

In the following pages are published colored pictures showing the major fruit pests and diseases, together with the latest control methods from official sources.

For black spot control it would, in the opinion of many experienced growers, be of commercial value if trained observers were appointed in specific areas to watch for the development of the spores and for information to be published in the press and broadcast by wireless, giving the exact time to spray. Further, with regard to Codlin Moth, growers would do well to place lure pots in trees to determine the periods of peak flights so that spraying could be done effectively and economically. Thus spraying would be on scientific lines, as opposed to more or less skilful guesswork. This should result in less spraying and greater success.

## **Thoroughness is Essential.**

Keep the trees healthy by correct orchard practices—cultivation, manuring, pruning, irrigation. Spraying is only one part of the work. Pests severely attack sickly trees.

The seasons are divided thus:—

**Spring**—September, October, November.

**Summer**—December, January, February.

**Autumn**—March, April, May.

**Winter**—June, July, August.

**In Winter.**—Spray deciduous trees with red oil, or lime-sulphur, to check San Jose, mussel and olive scale, red spider, bryobia mite, Pear phytophthorus.

For several fruit rots, spray in mid-winter, after pruning, with Bordeaux, 6-3-40. Spray vines with red oil, 1-20, to kill vine scale.

**Late Winter** (and before buds open in the spring).—Spray with red oil for scales and mites, and with Bordeaux or lime-sulphur for fungi. Lime-sulphur also destroys red spider and woolly aphids.

**In Spring.**—Spray deciduous trees and vines with Bordeaux or Burgundy mixture against black spot, leaf curl and other fungi. Spray with arsenate of lead for codlin moth and leaf-eating insects. Many growers use for the "calyx" spray on Apples and Pears, a combination of arsenate of lead with a fungicide. As a fungicide some growers use lime-sulphur, others Bordeaux or Burgundy. In spring, spray Peach, Nectarine, Plum trees, Roses, shrubs and garden plants with nicotine preparations to kill aphides, scales and plant bugs. Spray Apricot trees with Bordeaux 6-4-40 plus 1 lb. lime casein spreader during pink bud stage.

**In Summer.**—Spray citrus trees with oils or fumigate with hydrocyanic acid gas to kill scales. Continue with arsenate of lead on deciduous trees; white summer spraying oils will kill the codling eggs, and generally control aphids, red spider and other orchard pests. Continue with nicotine for aphides and scales. Dust with nicotine or pyrethrum insecticides.

**In Autumn.**—Spray deciduous trees with arsenate of lead for leaf and fruit-eating pests, Spray Apricot trees with Bordeaux 6-4-40 plus 1 lb. lime casein spreader to 100 gallons of spray, this being one of the necessary sprays to control scab or shot hole.

The use of spreaders to obtain more even distribution and better adhesion is recommended.

Always cleanse the vats and hoses immediately after using, otherwise copper sprays will injure the equipment, whilst oil emulsions may be spoilt by traces of lime, tobacco, etc.



# COOPER SPRAYS

## Are Definitely Superior

### COOPER'S

- **ARSINETTE** Specially prepared Arsenate of Lead Powder, unsurpassed for fineness of particles. Used for the control of all chewing grubs and insects. Packed in 1½ cwt., 1 cwt., 28 lb. and 4 lb. and 1 lb. units.

### COOPER'S

- **ALBOLEUM** Emulsified White Oil. Safe to use on all classes of fruit trees and shrubs at any season of the year. Used for the control of scale pests and as a general tonic. Controls Red Spider and Aphis. Packed in 44 gall., 5 gall., 4 gall., 2 gall., and 1 gall. containers.

### COOPER'S

- **BORDINETTE** Ready prepared Copper Fungicide. Mixes immediately with cold water and is then ready for use. For the control of all Fungous Diseases of plants for which a Copper spray is advocated. Dilution 1 lb. to 10 galls. Packed in 56 lb., 28 lb., 4 lb., and 8 oz. containers.

### COOPER'S

- **COLLOIDAL SULPHUR** Pure sulphur in semi-paste form. The finest form of sulphur ever produced, the particle size being less than one 25,000th part of an inch. Safe to use at all times. Controls Mildews, Spots, Brown Rot of Stone Fruit and other diseases for which sulphur in any form is used. Packed in 56 lb., 28 lb. kegs and 7 lb. and 3 lb. jars. Dilution 2 lb.-100 galls.

### COOPER'S

- **DRYMAC Derris Dust** A standardised non-poisonous dusting powder of proved efficiency for the destruction of insect pests attacking vines, vegetables and flowers, particularly cabbage moth caterpillars, aphis, thrips, beetles, etc. Sold in 112 lb. bags, 56 lb. cases, 7 lb. and 2 lb. and 1 lb. cartons.

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- **OVICIDE** The original Tar Distillate Wash. Used all over Australia for the control of aphis and other overwintering pests. For dormant spraying only. Packed in 44-gall., 5 gall., 2 gall. and 1-gall. containers. Dilution 1 gall to 35 gall. water.

Also **KATAKILLA**: non-poisonous derris spray; **NICOTINE**: 40 per cent.; **WEEDICIDE**: weed and scrub killer; **APTERITE**: soil fumigant; **WORMKILLER**: for lawns, etc.; **SOIL STERILISER**, etc., etc.

## William Cooper & Nephews (Australia) Pty. Limited, Sydney

(Manufacturers of Standardised Horticultural Remedies)

Victorian Distributor: Ramasy & Treganowan Ltd., 469-477 Latrobe St., Melbourne, C.I.



## CLASSIFIED INDEX OF ORCHARD PESTS AND DISEASES.

## Description of Pests as Illustrated.

**Woolly Aphis.**—This aphid lives in hollows and crevices, on the roots, trunks, and limbs of the Apple tree, causing very unsightly swellings, made by the pricking of their beak-like rostrums (or sucking tubes), thus absorbing the juices of the tree. They are manifested mainly by a white, downy appearance on the twigs, limbs and branches.

**Aphis of Peach (Black and Green).**—Black and Green Aphis infest branches and leaves, causing the latter to curl and dry up. They are very troublesome when the young shoots are beginning to grow in spring.

Black aphis infest roots.

Various Aphis also attack Roses, Carnations, Pansies, and garden plants.

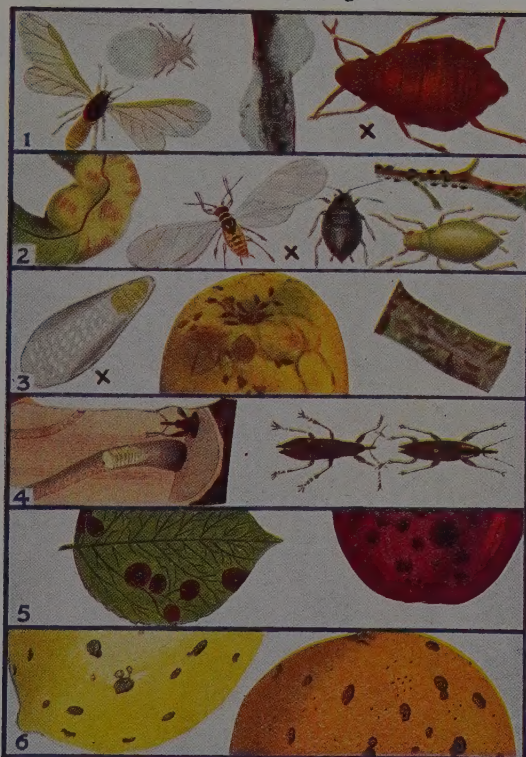
**Apple Mussel Scale.**—Attacks the fruit and branches of Apples, Pears, Plums, etc., disfigures the fruit; absorbs sap. If unchecked, will encrust the trunk and main arms.

**Apricot Beetles.**—Small Weevils with a tapering body, most destructive; they do great damage by boring and tunnelling into Apricot trees.

**Black Spot of Apple and Pears.**—These fungi attack both fruit and leaves. On the fruit they form dark green, often circular, velvety patches, and generally cause the fruit to crack. On the leaves they appear as round or oval spots.

**Black Spot of Orange and Lemon.**—The round sunken spots are of a dark brown color, and nestling in the centre are the minute, black, punctiform pustules, visible to the naked eye.

Pest or Disease. (X magnified.)



## Methods of Control of Insect Pests and Plant Diseases (illustrated above).

(1) **APHIS, WOOLLY** (*Eriosoma lanigera*).—Attacks Apple and Pear trees. **Introduce Aphelinus parasite into orchards.** Spray forcibly with nicotine solutions, white oils in summer, and Red Oil in winter. A combination winter spray, Nicotine Sulphate, Red Oil and soap has been found effective. Use pyrethrum dusts. Grow trees having blight-proof stocks.

(2) **APHIS OF PEACH.**—There are two aphids commonly attacking the Peach:—

Green Peach Aphis—*Myzus persicae*.

Black Peach Aphis—*Anuraphis persicae-niger*.

For Green Peach Aphis, use tar distillate 1 in 35 before mid-July; lime sulphur during winter; and white oil and nicotine sprays in the summer. It may be necessary to spray the trees several times in the summer. Keep ground near trees free from weeds.

For Black Peach Aphis, use nicotine sulphate or tobacco sprays in the summer. It may be necessary to spray the trees several times in the summer. Keep ground near trees free from weeds.

For the various aphids attacking Roses, Carnations, garden plants and vegetables, use tobacco sprays or dusts.

(3) **APPLE MUSSEL SCALE** (*Lepidosaphes ulmi*).—Spray in winter with Miscible Red Oils, 1

in 25, or Lime Sulphur, 1 in 15. Spray in summer with White Oils or nicotine solutions.

(4) **APRICOT BEETLES** (*Belus* sp.).—Spray with Arsenate of Lead. Inject Bisulphide of Carbon into tunnels made by beetles.

(5) **BLACK SPOT OF APPLE** (*Venturia inaequalis*).—Spray with Bordeaux Mixture 6-4-40 at the green tip stage, followed by Lime Sulphur 2-80 at petal fall stage, followed by Lime Sulphur 1 in 80 two weeks later.

For Pear Spot (*Venturia pirina*), spray with Bordeaux Mixture, 6-4-40, when the young folded leaves are just protruding from the bud, and again at a slightly later stage, when the young folded leaves and the blossom bud have separated. The blossom buds would still be green.

Some growers follow up with 4-5 ozs. of blue-stone with every 80 gallon vat of lead spray, using also 1 lb. lime casein spreader, or Bordeaux mixture 3-3-50 three weeks after the fruit has formed. The above schedule should not be used for Josephine Pears.

(6) **BLACK SPOT OF ORANGE and LEMON** (*Phoma citricarpa*).—Spray with neutral Bordeaux, 3-3-50, at the first appearance of blossom. If this stage is missed, spray 6-4-100 when fruit is well set. Citrus trees, where the drainage is not efficient, are more prone to this disease than trees on well-drained plantations. Use Sulphate of Iron,  $\frac{1}{2}$  lb. to each tree.



# Bordeaux Sprays

Prepared from

## ESA BLUESTONE

PREVENT AND CONTROL FRUIT DISEASE.

**ORCHARDISTS! Is Your Fruit Clean and of First Grade Quality?**



### Spraying to Prevent Disease is Your Only Insurance

Bordeaux when prepared from high grade Bluestone and Lime  
— is the principal fungicide for fruit disease control. —

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WHICH IS GUARANTEED TO BE NOT LESS THAN 99 PER CENT. PURE IS THE IDEAL BLUESTONE FOR THE JOB.

#### GRADES SUPPLIED:

Mixed Crystals in 1 cwt. cases and 5 cwt. casks

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ORCHARDISTS! LOOK FOR THE BRAND! "ESA."



**CLASSIFIED INDEX OF ORCHARD PESTS AND DISEASES (Continued).**

Pest or Disease. (X magnified.)

**Black Spot of Vine.**—The spores are ever-present. Under genial conditions for incubation and growth, the disease spreads rapidly, causing much loss. The disease seldom appears in dry seasons.

**Brown Rot.**—One of the most serious fungus diseases, the twigs, blossoms and fruit are attacked. (1) Blossom attack looks like frost injury. (2) The infected area on fruit spreads in concentric rings, which consist of millions of summer spores.

**Cherry Borer.**—The grub of the moth destroys Cherry, Apricot, Peach, Pear and Plum trees by boring into the branches, leaving a sawdust-like appearance on the outside of the hole.

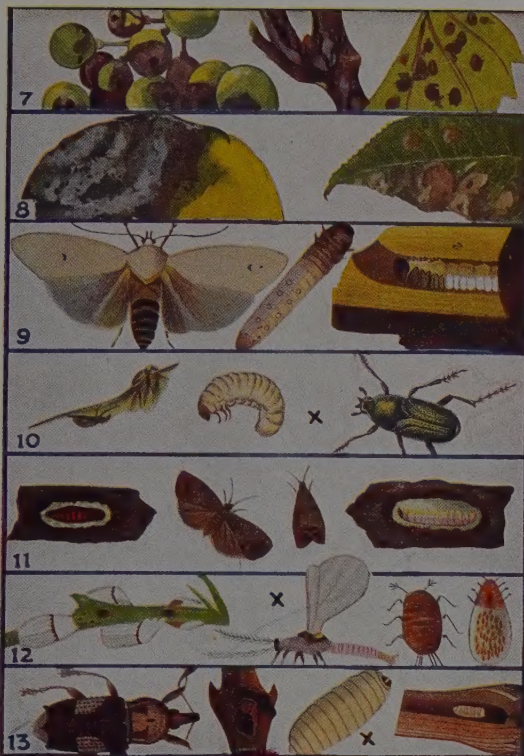
**Cherry Green Beetle.**—Attacks the leaves of Cherry, Peach, Plum and Apple trees, Roses, and garden plants, etc., and, being in large swarms, will strip a tree in a very short time.

**Codling Moth.**—The grubs, which hatch in eight or nine days from eggs laid at calyx of young fruit and on leaves, eat into the core; then they eat a tunnel to the outside of the fruit and lower themselves to the ground, and recommence the life-cycle. Several broods appear each season.

**Cottony Cushion Scale.**—A cushion-shaped scale insect, with a whitish-yellow, cottony down; attacks the leaves and stems.

**Curculio of Vine.**—A small boring weevil, reddish-brown, with light markings; very destructive. Will remain for twelve months or more in the wood.

Description of Pests as Illustrated.

**Methods of Control of Insect Pests and Plant Diseases (illustrated above).**

(7) **BLACK SPOT OF THE VINE** [*Anthrax-nose*] (*Manginia ampelina*).—Swab with Acid Iron Solution in early spring before vines show movement. Spray with Bordeaux or Burgundy Mixture (alkaline) when buds are bursting. Follow with Bordeaux or Burgundy neutral, giving applications according to weather conditions.

(8) **BROWN ROT** (*Sclerotinia fructicola*).—Attacks Peach, Plum, and other stone fruit. Destroy mummified fruit. Spray Peaches, Plums, with Bordeaux 6-4-40 at bud movement; follow with Dry Mix Lime Sulphur, 25 lbs. to 100 gallons, at petal fall, when the fruit is half grown and five weeks before picking; Apricots, Bordeaux, 6-4-40 early pink bud and late pink bud.

(9) **CHERRY BORER** (*Maroga unipunctata*).—Clear away the sawdust-like matter, inject Bisulphide of Carbon into tunnel; when using carbon, close mouth of tunnel immediately to keep fumes from escaping. Caterpillars can be destroyed by probing the tunnel.

(10) **CHERRY GREEN BEETLE** (*Diphucephala colaspoides*).—If no fruit on the tree, spray well with Arsenate of Lead when beetle appears. When fruit is ripening, spray with Hellebore powder, 1 oz. in 2 gallons of warm

water. This should be used perfectly fresh, as it is liable to deteriorate with age or exposure.

(11) **CODLING MOTH** (*Cydia pomonella*).—Attacks Apple, Pear, Apricot, Quince, Loquat, Walnut, etc. Spray with Arsenate of Lead, first after petals fall and before calyx cup closes, and at intervals of 21-30 days until within three weeks of gathering fruit. Fungicides may be used with calyx spray. Excellent results have been secured by spraying with White Oils after first Arsenate of Lead spray. Destroy fallen infected fruit. If bandaging trees, examine and destroy larvae, at least every 10 days. Use chemical bandages.

(12) **COTTONY-CUSHION SCALE** (*Icerya purchasi*).—Attacks Orange, Lemon and other citrus trees, shrubs, hedge plants, etc., very severe on Pittosporum hedges. Spray with White Oil when the trees are making a decided growth about November. This is the time of the release of the young scale in most districts.

(13) **CURCULIO OF VINE** (*Orthorrhinus Kluggii*).—Inject Bisulphide of Carbon into tunnel and close mouth. Probe with wire. Deterrent.—Spray with Lime-Sulphur in winter.



# "SPREGAN" COLLOIDAL LIQUID SULPHUR

For efficacious treatment of BLACK SPOT, DOWNY MILDEW, OIDIUM, BROWN ROT, and all Fungus Diseases for which Sulphur in any form may be used as a control.

**SAFE** . . . . Because it prevents Leaf Scorch.

SPREGAN Pure Colloidal Sulphur is among the safest of the chemicals, which are applied to the plant surface, and it may be safely employed in all instances where other types of sulphur would be used.

**CERTAIN** . . . Because it gives definite control of Fungus Diseases.

When SPREGAN Colloidal Sulphur comes in contact with the mycelium of the Fungus the latter is killed; spores of fungi are also prevented from germinating on the leaves that have been properly sprayed with SPREGAN.

**ECONOMICAL** . . . Because it ensures maximum results at less cost than other forms of Sulphurs.

It is very important, when using SPREGAN Colloidal Sulphur, that the spray should be applied in a fine misty form so that the leaves may be thoroughly covered, but not excessively wetted.

As a Precautionary Spray, 1-lb. of "SPREGAN" to 100 gallons of water.

As a Combatant Spray, 2-lb. of "SPREGAN" to 100 gallons of water.

Printed Matter Free on Application.

**Manufacturers:** COLLOIDAL SULPHUR PTY. LTD.

**Wholesale and Retail** . . . 446 Swanston St., Carlton, N. 3, Vic.

Methods of Control of Insect Pests, as illustrated on opposite page.

(14) **DOWNY MILDEW OF THE VINE** (*Plasmopara viticola*).—Spray with alkaline Copper Soda when vine shoots have grown 8 to 10 leaves. Subsequent sprayings about every seven days if weather conducive to fungus development. The summer treatment for Black Spot and Downy Mildew is identical.

(15) **ELEPHANT BEETLE OF THE ORANGE AND LEMON** (*Orthorrhinus cylindrostris*).—No satisfactory method is known for the control of this pest.

(16) **EMPEROR GUM MOTH** (*Antherea eucalypti*).—Spray when observed with Arsenate of Lead.

(17) **FRUIT FLY** [Mediterranean or West Australian] (*Ceratitis capitata*).—Attacks Peach, Orange, Banana, Quince, Apple, Tomato, Grape, etc. Kerosene in shallow vessels attracts the fly.

**Destroy all infected fruit.** Destroy weeds, work ground well under trees; poultry and insectivorous birds destroy chrysalids. Use a spraying solution—1 gallon of fruit juice (boil refuse fruit for about one hour), 1 lb. Arsenate of Lead, 25 gallons of water. Spray on windward side of tree.

**A Good Lure.**—One tablespoonful Scrubbs' ammonia, one teaspoonful essence of vanilla, 1½ pints water. A dessertspoonful of black treacle may be added, but is not essential. "Clensel" and other lures have been used with good results.

(18) **HARLEQUIN FRUIT BUG** (*Dindymus versicolor*).—Spray with Nicotine Solutions, Benzole Emulsion, White Oil or Clensel (1 in 25), whenever observed. Keep orchards free of marsh mallows.

(19) **HOLY OR CROSS BUG** (*Mictis profana*).—When observed, spray with Benzole Emulsion, Nicotine Extracts, or Pine Spray. Shake trees over piece of blanket, and destroy all bugs that fall. Spray with Benzol Emulsion.



**CLASSIFIED INDEX OF ORCHARD PESTS AND DISEASES (Continued).****Description of Pests as Illustrated.**

**Downy Mildew of Vine.**—This serious disease over-winters in the dead leaves infected during the preceding summer. Infection in the spring takes place through spores being splashed up by falling rain. These over-wintering spores (or oospores) retain vitality for over 12 months.

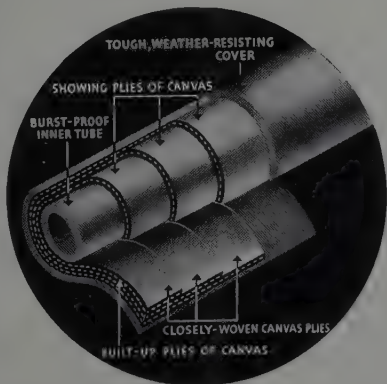
**Elephant Beetle of Orange and Lemon.**—A large brownish weevil with a long snout. This has become a serious pest to citrus trees. It bores into the trunks of the trees, causing them to die. It is also a pest of Elm and other street trees.

**Emperor Gum Moth.**—One of the largest Victorian moths. Grey in color with an eye-like spot on each wing, the larvae feed on Apple and Pear trees, also Eucalyptus and Pepper trees. Very destructive to Roses.

**Fruit Fly.**—The female punctures the fruit with its ovipositor, and deposits the eggs. Fruit is punctured in all stages, from green to ripe. The eggs hatch in two to five days in summer, and 10 to 15 in winter. In walking the wings are drooped. In summer the fly may complete its cycle from eggs to fly in 20 days.

**Harlequin Fruit Bug.**—These bugs, by making holes in the rind of the Apple with their rostrums (or sucking tubes), draw out the juice, causing the fruit to spot. They are also very destructive to garden plants, especially Dahlias, Tomatoes, etc.

**Holy or Cross Bug.**—This plant bug is a native insect and is very destructive to all kinds of Wattles (Acacias) and citrus trees. Like all plant bugs, this species sucks the sap with its rostrum or beak, causing the trees (twigs) to turn black and die down.

**Pest or Disease. (X magnified.)**

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Tasmania: Agents and Distributors in all leading districts.

Methods of Control of Insect Pests, as illustrated on opposite page.

(20) **LEAF CURL AND DIEBACK OF PEACH.**—By spraying in the late dormant period, or when the earliest buds are showing the slightest trace of pink, Leaf Curl can be prevented. Use Bordeaux Mixture (6-4-40). Finish spraying by the "early pink" stage.

(21) **LEMON LEAF AND PEEL SCALE** (*Mytilapsis citricola*).—Thin out all dead or diseased wood. Spray with White Oil, 1-40, when trees are making decided growth. Make solution soapy by adding 4 ozs. of a good hard soap to each 40 gallons. Fumigate with Hydrocyanic Acid Gas.

(22) **LIGHT BROWN APPLE MOTH** (*Tortrix postvittana*).—This pest is very common in home gardens, attacking Roses, Dahlias, Tomatoes, etc. The caterpillar is very lively, and quickly escapes if disturbed. Spray with Arsenate of Lead, same as for Codlin Moth, No. 11.

(23) **"LOOPERS" OR LOOPER CATERPILARS** (*Phrissogonus* sp.).—These attack fruit trees, particularly Apples, Pears and Cherries; and garden plants in the spring. Spray with Arsenate of Lead.

(24) **OIDIUM [Powdery Mildew of the Vine]** (*Oidium Tuckerii*).—Dust the vines with Flowers of Sulphur; first application when new shoots are six inches long; also dust with Sulphur just before blooming and after the fruit has formed. Keep vineyard clear of weeds.

(25) **OLEANDER OR ROUND WHITE SCALE** (*Aspidiotus hederæ*).—Attack Orange and Lemon trees, also Oleanders and garden shrubs, palms, ferns, etc. Spray well with White Oil or Nicotine solution when young are hatching (in summer). Starch spray is also recommended. On Palms, Dracaenas, Ferns, etc., use the Starch spray.

(26) **OLIVE OR BLACK SCALE** (*Saissetia oleæ*).—Attacks citrus, Apple, Apricot, vine, Olive, Pear, and Plum trees, also garden shrubs. Spray between November and March with White Oils. When young scale are moving is the favored time for their destruction.

(27) **ORANGE BUTTERFLY** (*Papilio anactus*).—Spray with Arsenate of Lead.



**CLASSIFIED INDEX OF ORCHARD PESTS AND DISEASES (Continued).****Description of Pests as Illustrated.**

**Leaf Curl and Dieback of Peach.**—When affected with Leaf Curl (*Exoascus deformans*), the first-formed leaves become thickened, puckered and discolored, and soon fall away. The fungus seems to winter in the buds.

**Lemon Leaf and Peel Scale.**—A small, dark-colored, mussel-shaped scale; the insect attacks leaves, bark and fruit of Lemon, Orange, Citron, Grapefruit, etc.

**Light Brown Apple Moth.**—These insects often attack late Apples, such as Yates, as late as March. Very destructive to Roses and garden plants.

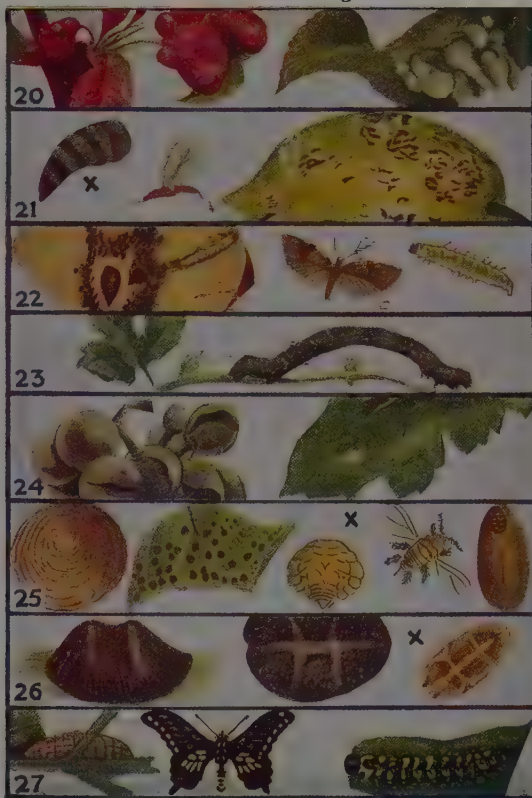
**Looper Caterpillar.**—The caterpillar loops its body up when walking. Some caterpillars resemble dead twigs. They are native insects and are becoming a serious pest in many parts of Victoria.

**Oidium (Powdery Mildew of Vine).**—This fungus appears during the growing season under sultry conditions, such as during a damp spring or after thunderstorms in summer. Dense undergrowth of weeds also tends to create conditions favorable for Oidium development.

**Oleander or Round White Scale.**—A small, light, greyish-brown, sometimes whitish scale, which attacks the leaves and stem, and is a most difficult insect to destroy when trees are badly infested with it.

**Olive or Black Scale.**—These destructive scales cause sooty fungus to develop on the leaves, making trees sickly. The scales are light brown when young with an H-like marking on back of scale.

**Orange Butterfly.**—In the warmer parts of Victoria these insects usually appear early in November. The yellow and black spiny caterpillars will attack Grapefruit if Orange or Lemon trees are not available; they attack the leaves, flowers and fruits of citrus.

**Pest or Disease. (X magnified.)**

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## THE WORLD'S BEST

A Complete Range of—

**ATOMISERS, BUCKET PUMPS, GARDEN  
SYRINGES, KNAPSACKS, BARREL  
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"REGA" Knapsack Dust Sprayer, force-fed; 600 cubic inch bellows capacity. Capacity 15 lbs.; weight 18 pounds.



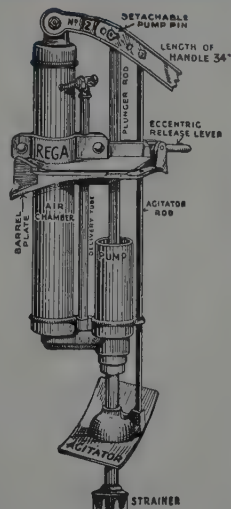
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"REGA" Knapsack Sprayer. Capacity 4 gals.; weight (empty) 16 lbs. Special features include pumping system, whereby surplus liquid above plunger is returned to the Container.

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MARKETERS OF:—NEPTUNE PREPARED SPRAYING OILS, "A" AND "C"—NEPTUNE PREPARED CRUDE SPRAY OIL—NEPTUNE WHITE SPRAYING OIL—NEPTUNE LIME SULPHUR SOLUTION—NEPTUNE SPRAY SPREADER—BERGER'S ARSENATE OF LEAD (PASTE OR POWDER)—N.C.O. PALE SPRAYING OIL—COLLOIDAL ARSENATE OF LEAD—GENUINE BLACK LEAF 40.

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Methods of Control of Insect Pests, as illustrated on opposite page.

(28) **ORANGE MOTH** (*Conogethes punctiferalis*).—Spray with Arsenate of Lead when observed.

(29) **PAINTED APPLE MOTH** (*Teia anartoides*).—Attacks fruit trees, also garden plants and shrubs. Spray with Arsenate of Lead, same as for Codling Moth (see No. 11).

(30) **PEAR PHYTOPTUS OR PEAR-LEAF BLISTER MITE** (*Phytoptus pyri*).—Spray in spring, when buds commence to swell, Red Oil, 1-25, or Lime-Sulphur: the latter assists in checking Black Spot.

(31) **PHYLLOXERA** (*Phylloxera vastatrix*).—Plant Phylloxera resistant vines.

(32) **POTATO BLIGHT** [Irish] (*Phytophthora infestans*).—Spray with Bordeaux Mixture, 8-10-40. Commence spraying when the plants are from 4in. to 6in. high, and continue to spray every 10 days or two weeks, making in all five or seven sprayings. Use at least 80 lbs. pressure

to the square inch, and the three-nozzle arrangement, so that the spray will be thrown each side as well as on top. For Potatoes, use clean seed dipped in Formalin.

(33) **POWDERY MILDEW** (*Poposphaera leucotricha*).—In winter, prune off and burn infected shoots. Spray with Lime-Sulphur, 1-30, between open cluster and pink stage; Precipitated Sulphur, 10-100, at petal fall, and again (with the last-named spray) early in January. If disease is troublesome, middle of February.

(34) **PEACH RUST** (*Puccinia pruni*).—Spray Bordeaux, 6-4-40, at the pink bud stage and follow with Dry Mix Lime Sulphur as for Brown Rot.

## DUSTING.

The method of dusting trees with insecticides and fungicides instead of, and in addition to, spraying, has met with favor. Points claimed in favor of dusting are its efficacy, ease of application, and consequent saving of labor; the dual application of powdered insecticides and fungicides in one operation.

In vegetable and flower culture dusting is quite an accepted practice.



**CLASSIFIED INDEX OF ORCHARD PESTS AND DISEASES (Continued).**

Description of Pests as Illustrated.

Pest or Disease. (X magnified.)

**Orange Moth.**—The larvae of this moth feed on the leaves and young shoots, and is very destructive. The caterpillars of this moth destroy young flowers, buds and young shoots of Orange and Lemon, as well as the foliage.

**Painted Apple Moth.**—The caterpillars are covered with dark grey tufts of hairs on back near tail. They do great damage by eating the epidermis or surface of the leaves, also young shoots. These moths often appear when the flowers of Apples, Pears, Quinces, etc., are commencing to show. It may therefore be necessary to spray early.

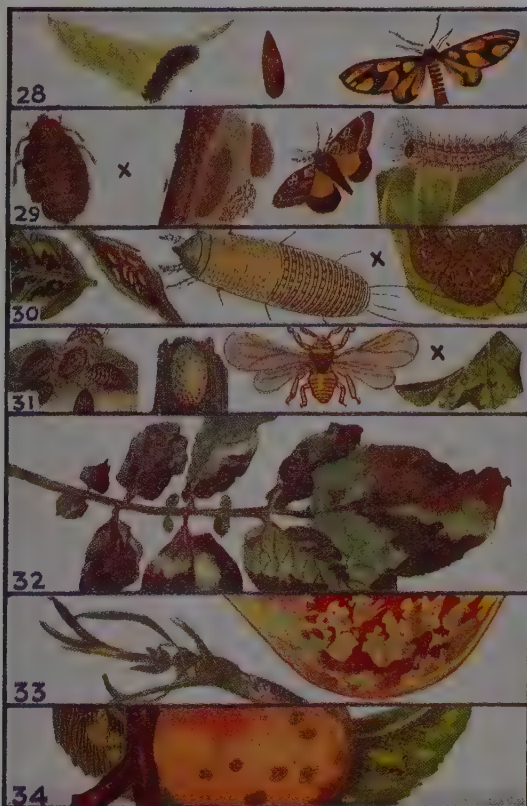
**Pear Phytoptus or Pear Leaf Blister Mite.** — These mites, by sucking away the juice of the leaves, cause them to turn brown and nearly black. Also attacks fruit.

**Phylloxera.**—Attacks leaves and roots, growth becomes stunted, and leaves turn yellow.

**Potato Blight (Irish).**—Attacks Potatoes, Tomatoes, etc. The first indication seen on the leaf is a slight reduction in the intensity of the coloring matter, followed by the appearance of the brownish blotches at the edge of the leaf. In humid weather they spread with immense rapidity. The disease travels down the haulms, and the plant may within a few hours become a blackish mass, emitting an evil odor. Wet seasons favor the disease.

**Powdery Mildew.**—A serious disease, which attacks leaves, shoots, blossom-buds and fruits of Apples and Pears. Leaves and buds become covered with glistening white masses; fruit is disfigured and small.

**Prune Rust.**—Attacks Plum trees. Golden yellow pustules on young wood form cracks; sometimes twigs die. Hard scabs form on fruit—useless for canning. Leaf injury means poor crop next season.



# PATERSON'S ——— CONCENTRATED CLENSEL

*The Perfect Insecticide and Fungicide*

**Sudden Death to Insect Pests**

*This General Purpose Orchard Spray is Now Manufactured in Australia*

## Orchardists:

"CLENSEL" is non-poisonous and effective, easy to handle, economical and absolutely harmless to trees and foliage.

"CLENSEL" can be used in every season of the year on Apples, Pears, Vine Fruits, Citrus and other fruits.

Invaluable for pests which are vulnerable to contact insecticides or for use in conjunction with sprays that are applied for chewing insects and fungus diseases.

## Market Gardeners:

"CLENSEL" will be found effective in the control of Cabbage Aphids, Red Spider, Rutherglen Bug, Pea Mite, Cabbage Moth, Onion Thrips, Bean Aphids, Jassids, Leaf Hoppers, Canary Flies and Harlequin Bug.

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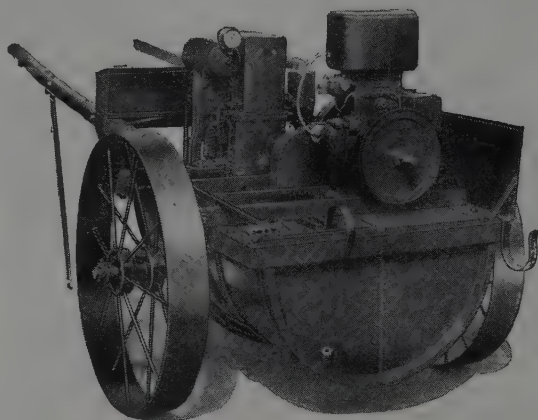
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Tar Distillate . . . . .	for Aphis
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Sulphur Smoke . . . . .	Insecticide & Fungicide
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No. 17—Chewing Insect Dust.
No. 18—Chewing Insect Dust (double strength).
No. 21—Blight, Fungus and Insect Dust.
No. 45—Quick acting Combined Sulphur and Nicotine Dust for Sucking Insects.
No. 50—All-in-One Dust, a general purpose Insecticide and Fungicide.
No. 51—Derris Dust, non-poisonous, for Sucking and Chewing Insects.

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Grafton - Lismore - Orange - Wagga

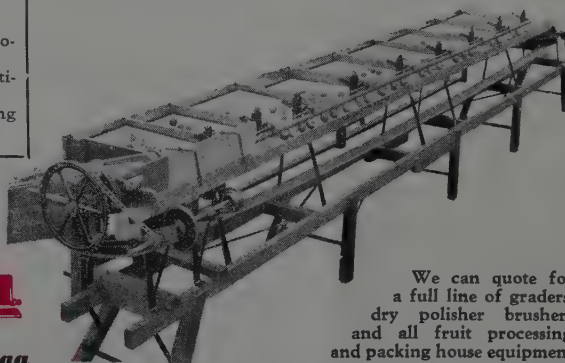
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**"Buzacott" W454**

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- ◆ **CAPACITY**—Vat holds 100 gals. and plant is capable of operating 6 "Rosebery" power nozzles at 350 lbs. pressure or 2 "Edgell" Spray Pistols at 350 lbs. pressure.
- ◆ **CONSTRUCTION**—Simple but solid and reliable. Vat of specially treated timber—all steel welded frame—robust axle and axle supports—sheet metal side shields—heavy roller chain drive with sheet metal housing.

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**finest GRADER**  
you can buy—  
**HARVEY'S**



We can quote for  
a full line of graders,  
dry polisher brushes  
and all fruit processing  
and packing house equipment



**CLASSIFIED INDEX OF ORCHARD PESTS AND DISEASES (Continued).****Description of Pests as Illustrated.**

**Red Mites, Bryobia, Etc.**—The young mites are red, becoming brownish when fully grown. This species is larger than the common so-called "Red Spider." Eggs red, globular, these are often deposited on young fruit spurs and garden foliage.

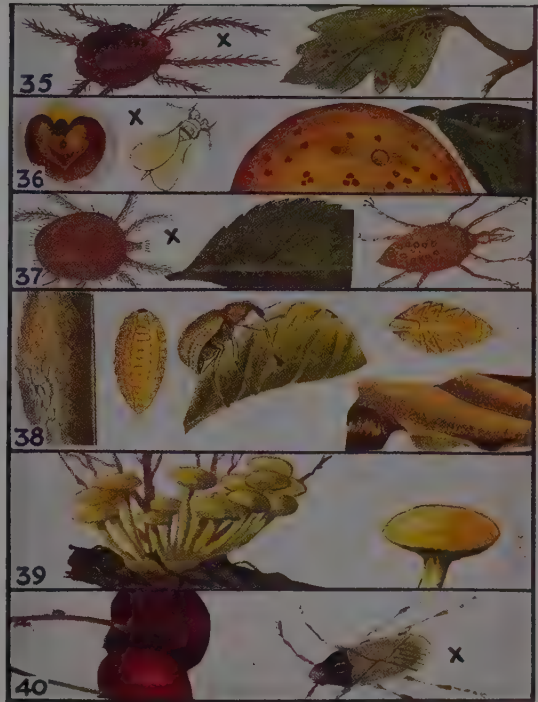
**Red Scale of Orange.**—A small reddish brown scale insect; attacks fruit, leaves and branches, also Roses and garden shrubs; spreads very quickly.

**Red Spider.**—The sap is sucked by numbers of these insects from the leaves, causing them to turn yellow. It is difficult for the amateur to locate the pest until a certain amount of damage is done.

**Root Borer.**—The grub attacks trees by tunnelling along the roots, and the beetle by eating the leaves. The beetle climbs the tree, fastens the leaves together with a gluey substance, and then lays her eggs. When hatched the young grubs drop to the ground and feed on the roots. The pest usually appears on the leaves for feeding in the spring.

**Root Rot (Armillaria Mellea).**—A destructive root fungus, which attacks all fruit trees and many garden plants.

**Rutherglen Bug.**—These plant bugs insert their beaks or rostrums into the fruit and extract the juice, causing the fruit to wither, become dry, and perfectly useless; they also attack flowers and vegetables, sucking the sap and causing the plants to wither. Usually appear in the summer.

**Pest or Disease. (X magnified.)****Methods of Control of Insect Pests, as illustrated above.**

(35) **RED MITES, BRYOBIA, Etc. (Bryobia pratensis).**—They attack fruit trees, also garden plants, flowers, vegetables, etc. Spray with Lime-Sulphur or Red Oil, 1-20, when buds commence to swell. If mites are present on leaves in summer, spray with White Oils or Nicotine Solutions.

(36) **RED SCALE OF ORANGE (Aonidiella auranti).**—Spray same as for Lemon Leaf and Peel Scale. When young are hatching in summer Tobacco Sprays could be used. Fumigate.

(37) **RED SPIDER (Tetranychus telarius).**—Same as for Red Mites. (See No. 35.) For Red Spider on beans spray as above or dust with finely powdered sulphur.

(38) **ROOT BORER (Leptops squalidus).**—Attacks Apples, Pears, vines, etc. Place a 3½ in. zinc band round tree trunk 18 in. from ground. Destroy all beetles observed. Keep orchards clean in the spring, as the insects lay their eggs on weeds, leaves, or suckers. Spray with Arsenate of Lead. Hymenopterous (wasp) parasites are valuable. Jar the trees over a blanket; gather and destroy the beetles.

(39) **ROOT ROT (Armillaria mellea).**—Remove and destroy affected trees in order to prevent the disease spreading and dress the soil with Sulphate of Iron and Quicklime before replanting.

(40) **RUTHERGLEN BUG (Nysius vinitor).**—Spray with Benzole Emulsion, Nicotine Solutions, when the bugs appear. Apply Pyrethrum or Nicotine Dust. Keep down weeds. Smudge fires will drive them away from orchards. As a deterrent, spray with Benzole Emulsion.

**Mealy Bug (Pseudococcus longispinus).**—Small destructive insects, light yellow to grey, covered with powdery substance. Spray with tobacco preparations, or benzole emulsion.

**Pear Root Aphid (Eriosoma pyricola).**—Closely allied to woolly aphid; the former works entirely underground. Scatter paradichlorobenzene (P.D.B.) on surface of soil and dig in, or place in hole 6 in. deep excavated around tree. Use 3 to 10 oz. P.D.B., according to size of tree. Dip young trees before planting in tobacco water or red oil solution.

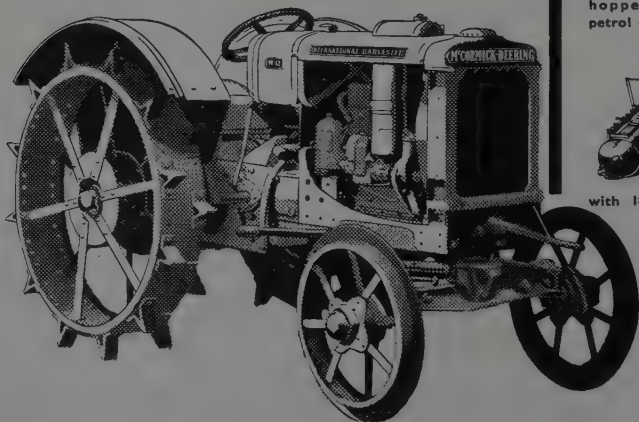
**The Dicky Rice Weevil** attacks citrus trees. Spray with arsenate of lead, 1-20, as soon as observed (generally early in November).





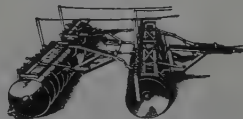
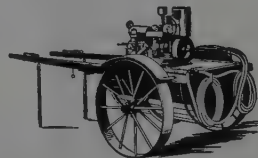
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International B-7 tractor orchard mouldboard ploughs. 2 and 3-furrow sizes. Special drawbar construction permits plowing land right up to the base of the trees.

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The McCormick-Deering No. 9A tractor disc harrow will stand up to the hardest conditions of tractor operation. Made in 5, 6, 7, 8 and 10-ft. sizes. Automatic gang angling device.

**INTERNATIONAL HARVESTER  
COMPANY OF AUSTRALIA  
PTY. LTD.**

(INCORPORATED IN VICTORIA)

543-555 Bourke St., Melbourne, C.I.

**CLASSIFIED INDEX OF ORCHARD PESTS AND DISEASES (Continued).****Description of Pests as Illustrated.**

**San Jose Scale.**—Attacks fruit trees—Pear, Apple, Cherry, Plum, Apricot, etc., also Roses, shrubs and hedge plants. A small scale insect of light orange color; attacks trunk, limbs, foliage and fruit. Is very destructive. When Apples and Pears (fruit) are attacked, light red rings appear on the fruit around the scales.

**Scab of Orange and Lemon.**—Lemon Scurf, dingy white scurfy patches. Grey scab of Orange, the patches are flat, almost round, and break up into minute flakes. Greyish-brown scab of the Lemon occurs on both ripe and green Lemons. False Melanose is another form of scab.

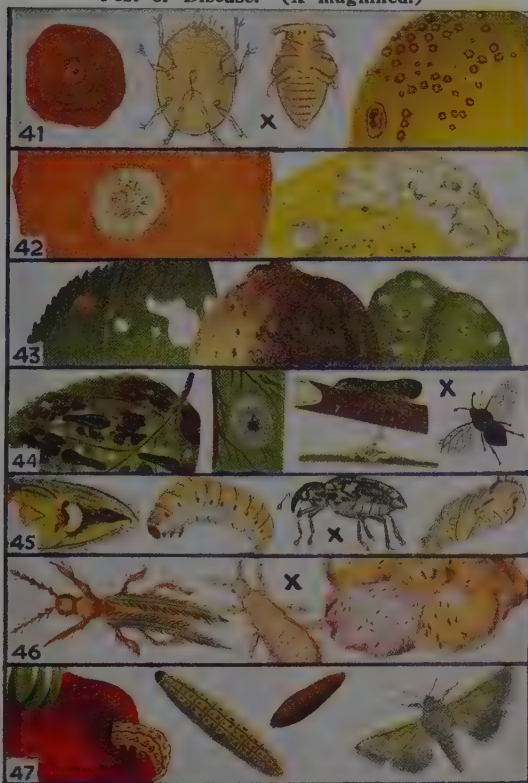
**Shot Hole.**—Attacks blossom, leaves, twigs and sometimes fruit of Apricot, Cherry, Plum, etc. Blossom infection looks like frost injury. Leaf infection occurs very early, often reducing leaves to skeletons. Gum often exudes from ruptured bark. Scabiness appears on Apricot fruit.

**Slug of Pear and Cherry.**—The larvae attack the leaves, doing serious mischief by devouring the skin of the upper side of the leaf. The underside is left untouched, and turns to a deep brown color. They attack the tree mainly in late spring, when the foliage is young.

**Strawberry Beetle.**—In November and December these insects do most damage; the beetle attacks the leaves and flowers, and the larvae bores into the plant.

**Thrips.**—One of the worst insect pests. All kinds of fruit, flowers and vegetables, especially Onions, are attacked.

**Tomato Moth.**—The eggs of this moth are deposited on leaves and stem. The young larvae crawl up the stem and eat their way at once into the flesh, which is destroyed. There is scarcely any limit to the number of plants this pest will attack, cereals, maize, vines, garden plants, etc.

**Pest or Disease. (X magnified.)****Methods of Control of Insect Pests and Plant Diseases (illustrated above).**

(41) **SAN JOSE SCALE** (*Aspidiotus perniciosus*).—Burn all prunings promptly. Spray in late winter with Red Oil, 1-20 or Lime-Sulphur, 1-10. In summer, when scales are moving, spray with White Oils or Nicotine.

(42) **SCAB OF ORANGE AND LEMON.**—As this disease attacks new growth, spray with Bordeaux (3-3-50), to which has been added 1 per cent. of Red Oil, before the new growth begins.

(43) **SHOT HOLE** (*Coryneum Beijerinckii*).—Spray Bordeaux, 6-4-40, before leaves fall in autumn; 6-4-40 at "pink" stage. Use lime casein spreader with the Bordeaux mixture.

(44) **SLUG OF PEAR AND CHERRY** (*Caliroa limacina*).—Cherry, Peach, Quince, Plum and other trees are attacked. Spray with Arsenate of Lead. The first spray for Codlin usually kills the Pear Slug. Spray unbearing trees or Hawthorn hedges if necessary. Dust with lime, powdered Lead Arsenate, Sulphur, ashes, or sand.

(45) **STRAWBERRY BEETLE** (*Rhinaria peridix*).—Spray with Arsenate of Lead before fruit is ripening. As a deterrent, spray with Benzole Emulsion.

(46) **THRIPS.**—When not in plague numbers, thrips do not seriously affect fruit crops. Scientific investigations prove that plague infestations as well as freedom from the pest, can be forecast from the numbers of insects present in the autumn and early spring. Pyrethrum and derris dusts kill thrips and act as repellants for two days with each application.

(47) **TOMATO MOTH** (*Heliothis armigera*).—Use poisoned baits, bran and arsenic, also Arsenate of Calcium. Spray with Arsenate of Lead or dust with powdered Arsenate of Lead. Keep soil around plants well forked.

**FUMIGATION.**

Fumigation with Hydrocyanic Acid Gas kills red scale of citrus trees and various other scales and pests. In Victoria fumigation is compulsory. Tents are placed over trees, calcium cyanide dust, 1 oz. per 100 cub. feet, is forced in by means of a hose and blower. On being released to the air hydrocyanic acid gas is formed. This has largely superseded the "pot" method of mixing cyanide, sulphuric acid and water.

Fumigation is done (on still nights) from late December to early June; the temperature should not be below 50 deg., and humidity should not exceed 80 degrees.



For Cleaner, Healthier Trees...for Better Quality Fruit...  
for Bigger, More Profitable Crops...use

# SHELL SPRAYING OIL

**SHELL REDSPRAY  
SHELL PALESPRAY**  
for DORMANT SEASON

Spray for Red Mites, Red Spider, Woolly Aphis and San Jose with Shell Redspray or Palespray. They will eliminate the pests, and leave the trees clean and healthy. Shell Palespray emulsifies with hard or soft water, and can be mixed with fungicides.

**SHELLICIDE "D"**  
for SEMI-DORMANT STAGE

Shellicide "D"—absolutely safe and remarkably efficient—mixes with hard or soft water, Bordeaux Mixture, Nicotine Sulphate and Lime Sulphur Solution without curdling.

**SHELL WHITESPRAY**  
for SUMMER SPRAYING

For complete elimination of scale and for perfect control of egg-laying insects—Codlin, Aphis, Spider, etc., Shell Whitespray emulsifies readily with soft or hard water and spreads freely.

Products of The Shell Company of Australia Limited



SO.38/1.

## CLASSIFIED INDEX OF ORCHARD PESTS AND DISEASES (Continued).

## Description of Pests as Illustrated.

**Transit Rot.**—Attacks fruits only through skin injury. It appears as a cottony mould, at first white, but quickly changing to black. The fungus produces a rot which at first is brown and quite firm; then the cells rapidly break down and the fruit becomes a watery mass.

**Vine Hawk Moth (Silver Striped).**—The caterpillar of this moth strips the vines of their leaves in a very short time, even quicker than the caterpillar of the Vine Moth.

**Vine Moth.**—The caterpillar, or larvae, of this moth attacks the leaves and young Grapes, also Virginia Creeper, and will very quickly denude the vines and creepers of their foliage.

**Vine Scale.**—One of the largest scales infesting plants. Attacks vines, Jap. Plums, etc. This scale has become a pest in flower gardens. Many kinds of creeping plants, viz.:—Tacsonia, Abutilon, Mandevillea, Cobaea, etc., being attacked.

**White Ants.**—This destructive pest attacks timber trees, vines, Apricot, Orange and Peach trees, also furniture, etc.; is a very serious enemy.

**Wither Tip of Orange and Lemon.**—Often called "Dieback," as twigs die from the top downwards. ("Dieback" of Apple trees may be associated with this disease.) On the undersurface of the leaf whitish grey blisters arise. The leaf withers at the tip and is gradually destroyed; blotches appear on stem.

**Pea Mite.**—A serious pest. The body of this mite is dull blue. They have rather long red legs. They run very rapidly when disturbed, and soon get out of sight, hiding in crevices or under lumps of earth.

## Pest or Disease. (X magnified.)



## Methods of Control of Insect Pests and Plant Diseases (illustrated above).

(48) **TRANSIT ROT** (*Rhizopus nigricans* Ehr., *Rhizopus arrhizus* Fisch).—Handle fruit carefully, preventing skin injury. Sterilise cases in boiling water. Spray shed interiors and all wood-work with 1 lb. bluestone to 5 gallons water. After picking and packing, pre-cool fruit immediately for two days at 35 deg. F., and transport to market in iced insulated trucks or louvre trucks.

(49) **VINE HAWK MOTH, SILVER STRIPED** (*Charocampa celerio*).—Spray with Arsenate of Lead, whenever observed.

(50) **VINE MOTH** (*Phalænoides glycine*).—Spray with Arsenate of Lead, whenever observed. Keep soil at the foot of the vines worked up to destroy chrysalids in soil.

(51) **VINE SCALE** (*Eulecanium persicae*).—Sprays same as for Olive or Black Scale. Spray in summer when young are observed with Tobacco extract.

(52) **WHITE ANT OR TERMITE** (*Termes lacteus*).—Apply Manurial Insecticides or Kainit to roots. Inject Carbon Bisulphide if nests located.

(53) **WITHER-TIP OF ORANGE & LEMON** (*Phoma omnivora*).—Prune out all diseased

wood and spray with Bordeaux Mixture (6-4-40) or Copper Soda (6-9-40).

(54) **PEA MITE** (*Penthaeus major*).—Attacks Peas, Onions, Potatoes, Beans, Beet, etc., also flowers. When mites appear, plough deeply and destroy all weeds, particularly Capeweed as the mites breed on these. They will not live for any length of time on clean cultivation, but fairly quickly migrate across it from pasture paddocks, dirty headlands, etc. Any plot freed from mites by cultivation or other treatment may be kept free by placing a trail of Creosote, or a mixture of Kerosene and Phenyle, about four inches wide, right across the plot. The mites will not be able to cross this for a few weeks.

Take 1 part of Carbolic Powder (15 per cent.), 3 parts Lime, Super. of Gypsum, and broadcast over the plants, and work into soil at the rate of 2 cwt. per acre.

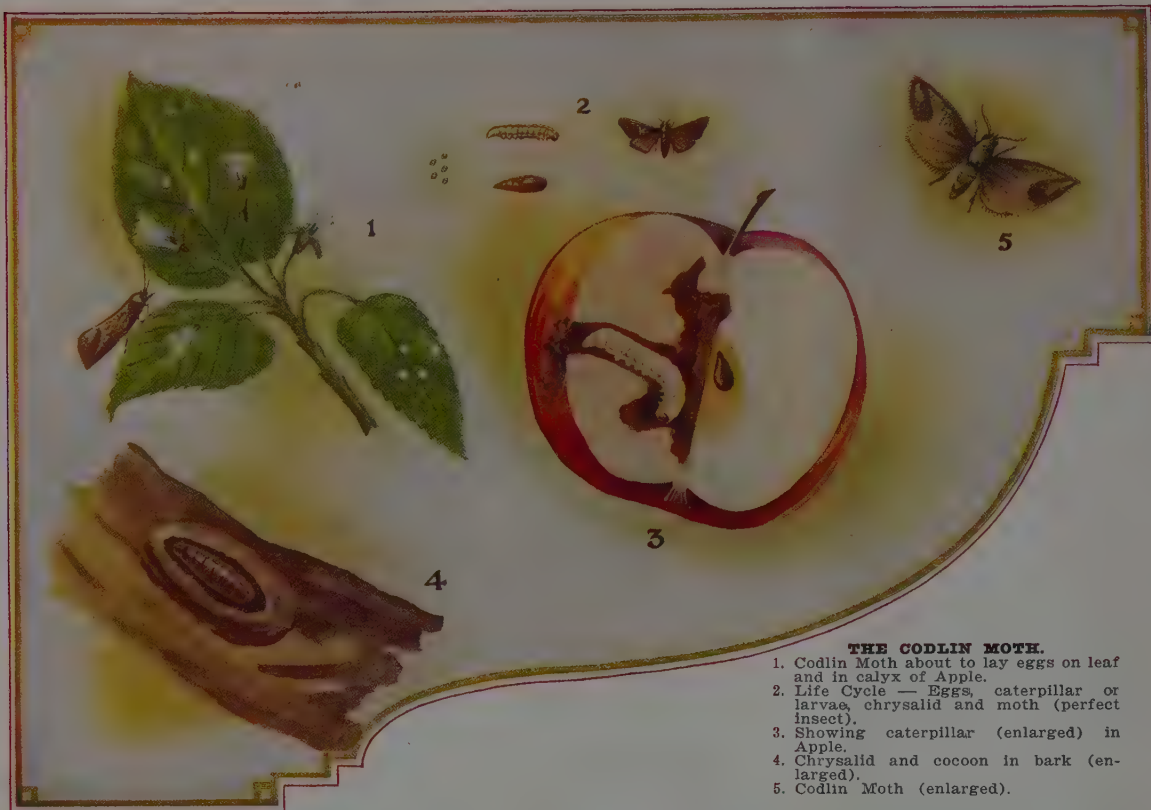
Tobacco Dust (Pestend) and Lime in equal quantities have been used in a similar way with some success by market gardeners. Manurial Insecticide used at the rate of 1½ to 2 cwt. to the acre has also been fairly effective in some parts.

Spray with Nicotine solutions.

Dust with Nictar dust.



# THE CODLING MOTH



## THE CODLING MOTH.

1. Codlin Moth about to lay eggs on leaf and in calyx of Apple.
2. Life Cycle — Eggs, caterpillar or larvae, chrysalid and moth (perfect insect).
3. Showing caterpillar (enlarged) in Apple.
4. Chrysalid and cocoon in bark (enlarged).
5. Codlin Moth (enlarged).

**IT PAYS YOU** to Produce Highest Quality Fruit

**LION  
BRAND.**



**IT PAYS US** to Produce the Highest Quality Fruit Sprays

We maintain a standard that will build up our business and win the confidence and goodwill of our customers.

It will pay you handsomely to use "Lion" Brand Sprays to ensure the maximum protection from the ravages of insect pests and fungus diseases.

The wisdom of your choice will be reflected in your profits at the end of the season.

### Some Well Known "LION" Brand Sprays

ARSENATE OF LEAD (PASTE)  
 ARSENATE OF LEAD (POWDER)  
 LIME SULPHUR  
 WHITE OIL EMULSION  
 PREPARED RED OIL  
 SPOR-O-CIDE (BORDEAUX MIXTURE)  
 BORDEAUX COMPOUND  
 SPREADER (Special) CASEINATE  
 SPREADER (Ordinary)  
 CALCIUM CASEINATE, Etc., Etc.  
 ATOMIC, SULPHUR POWDER

MANUFACTURERS:

**ORCHARD SPRAYS PTY. LTD., 549-551 Church St., Richmond, Vic.**

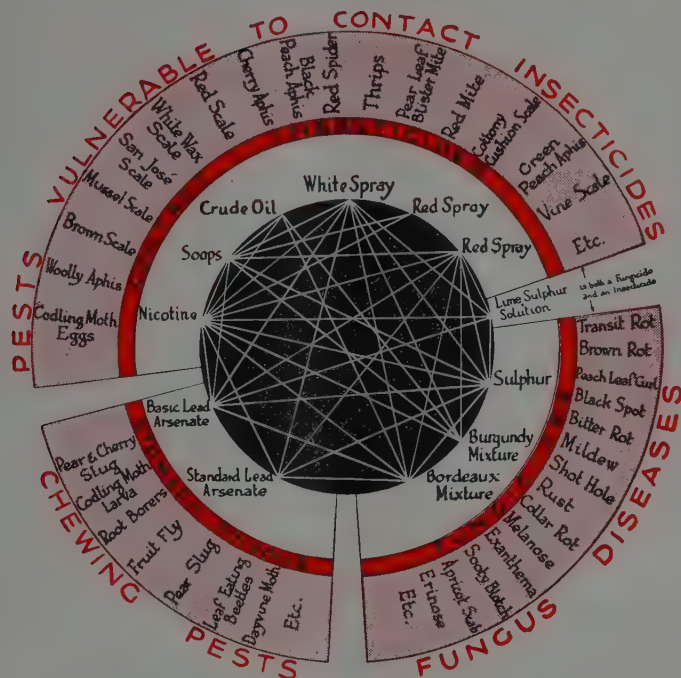
Agents:  
**SOUTHERN VICTORIA PEAR  
 PACKING CO. LTD.,**  
 Blackburn, Vic.

Distributors for South Australia:  
**FRUITGROWERS' & MARKET  
 GARDENERS' SOCIETY LTD.,**  
 Rundle Street, Adelaide.

Distributors for Tasmania:  
**ROBERTS & CO. LTD.,** Murray Street,  
 Hobart.  
**F. H. STEPHENS Pty. Ltd.,** Launceston

# Compatability Chart

With Types of Orchard Pests and Diseases and Materials Suitable for their Control



## Classified Index of Orchard Pests and Diseases which Attack Various Fruits and Vegetables

See Colored Illustrations on Foregoing Pages.

### Apple—

- 1.—Woolly aphid.
- 3.—Apple mussel scale.
- 5.—Black spot of Apple.
- 11.—Codlin moth.
- 22.—Light brown Apple moth.
- 23.—Loopers.
- 29.—Painted Apple moth.
- 33.—Powdery mildew.
- 35.—Red mites (Bryobia).
- 37.—Red spider.
- 38.—Apple root borer.
- 39.—Armillaria.
- 41.—San Jose scale.
- 46.—Thrips.

### Pears—

- 5.—Black spot of Pears.
- Pear root aphid.
- 11.—Codlin moth.
- 22.—Loopers.
- 30.—Pear phytophthora.
- 40.—Pear slug.

## CLOUDUST Insecticides and Fungicides ★ ★ ★



- ★ Produced with the same degree of efficiency that is essential in the manufacture of medicinal products.★
- ★ CLOUDUST Chemists have developed a line of agricultural chemicals, incorporating many improvements to make CLOUDUST PRODUCTS:—

- LEAD ARSENATE POWDER
- LEAD ARSENATE PASTE
- CALCIUM ARSENATE
- COPPER CARBONATE
- WETTABLE SULPHUR
- COPPER SULPHATE
- ROOT DUST GUNS (Rotary Type, the World's Best Dusting Machines).
- DERROD (Non-Poisonous)
- NICOTINE SULPHATE (41%)
- COPPER SPRAY (Improved Bordeaux)
- DUSTING MATERIALS
- SPRAY SPREADER
- MONOHYDRATED COPPER SULPHATE

## CLOUDUST — SPRAY — MANUFACTURERS

WHOLESALE AGRICULTURAL MANUFACTURING CHEMISTS

N.S.W.: 396D Sussex Street, Sydney.

Victorian Distributors: Hamilton, Downing & Co., Nicholas Bldgs., Swanston St., Melb.

Qld. Head Office: Little Roma St., Brisbane. Works: Montague Rd., Sth. Bris.



**Vines—**

- 7.—Black spot of vines.
- 13.—Curculio of the vine.
- 14.—Downy mildew of the vine.
- 24.—Oidium of the vine.
- 31.—Phylloxera.
- 49.—Vine hawk moth.
- 50.—Vine moth.
- 51.—Vine scale.

**Citrus—**

- 6.—Black spot of Citrus.
- 12.—Cottony cushion scale.
- 15.—Elephant beetle of Orange and Lemon.
- 17.—Fruit fly.
- 21.—Lemon leaf peel scale.
- 25.—Oleander scale.
- 26.—Olive or black scale.

- 27.—Orange butterfly.

- 28.—Orange moth.

- 36.—Red scale.

- Dicky rice weevil.

- 39.—Armillarea.

- 42.—Scab of Orange and Lemon.

- 53.—Wither tip of Citrus.

- Holy Bug.

**Stone Fruits—**

- 2.—Aphis of the Peach.

- 4.—Apricot beetle.

- 8.—Brown rot.

- 9.—Cherry borer.

- 10.—Cherry green beetle.

- 20.—Peach leaf curl.

- 34.—Prune rust.

- 39.—Armillarea.

- 40.—Rutherglen bug.

- 41.—San Jose scale.

- 43.—Shot hole.

- 48.—Transit rot.

- Oriental Peach moth.

**Vegetables—**

- 18.—Harlequin bug.

- 32.—Irish blight of the Potato—  
Potato blight.

- 37.—Red spider.

- 46.—Thrips.

- 47.—Tomato moth.

- 54.—Pea mite.

**Miscellaneous—**

- 45.—Strawberry beetle.

- 16.—Emperor gum moth.

- 52.—White ants.

**ORCHARD HYGIENE.**

Prevention should be the dominant note in any consideration of infection or infestation. Orchard hygiene may be just as important as a spray programme in keeping pests down to a minimum. A knowledge of how pests hibernate is invaluable—care taken to prevent, as far as possible, a carryover from season to season will keep trees freer from pests, and reduce the amount necessary to spend on a spray programme. The following reminders should be of value:—

Don't leave "mummies" of fruit on the trees, or on the ground. These should be removed at pruning time, and burned, otherwise they are a source of re-infection. At pruning time, also destroy immediately all cuttings that might be infested with fungi, scale, or other pests. Keep the incinerator handy.

Diseased fruit should not be left around packing sheds. Packing sheds, also, often harbor the larvae of codling moths, and an occasional tour of inspection is well repaid. Packing cases should be sterilised if second-hand or used more than once; these are often sources of infection.

## The BAVE - U Power Sprayer

**Strongly Built - - - Reliable in Use - - - Gives Complete Satisfaction**

- **ENGINE**—Strong, powerful, crankshaft is mounted on Timken roller bearings. Crankcase enclosed which keeps out all dust and grit from moving parts of the engine.
- **PUMP**—Assures a perfectly steady spray, eccentrics enclosed running in oil. Pumpshaft mounted on ball races. Automatic pressure unloader. Stainless steel plungers.
- **STRAINER**—"Worth its weight in gold." Will not rust.
- **AGITATOR**—Keeps mixture thoroughly stirred all the time. All fittings in vat made of gunmetal to resist corrosion.



*The Illustration shows the BAVE-U Spraying of Noxious Weeds by the Lands Dept. in the Calignee District.*

Inquiries Invited by the Manufacturers

**RUSSELL & CO. - Box Hill, E.11. Vic.**

# Fruit Production in Australia

## Review of Principal Crops in the Various States — Areas — Varieties, Production, etc.

JUDGED by the latest statistics released by the Commonwealth Bureau of Census and Statistics, Canberra, on October 26, 1937, and recording for 1936, New South Wales is the largest producer of large fruits with 68,907 acres of trees in bearing and 13,795 acres non-bearing, a total of 82,702 acres under all classes of large fruits.

### Area Under Fruit by States.

Taking again only the leading varieties and noting the area under production, both bearing and non-bearing,

	N.S.W.	Vic.	Qld.	S.A.	W.A.	Tas.	Federal.	Total.
Apples . . . . .	16,665	30,466	5,452	10,419	12,762	26,191	48	102,008
Oranges . . . . .	24,890	5,367	3,222	4,601	3,170	—	5	41,255
Peaches . . . . .	6,826	11,916	1,711	1,525	819	76	3	22,876
Bananas . . . . .	13,029	—	8,500	—	272	—	—	21,801
Pears . . . . .	3,701	11,329	225	1,790	1,022	2,245	4	20,316
Plums . . . . .	2,623	3,690	1,260	2,571	1,125	545	7	11,821
Apricots . . . . .	1,846	4,081	145	2,987	695	1,408	3	11,165
Other Fruits . . . . .	13,122	8,939	6,029	5,229	1,802	2,907	6	40,034
<b>Total all large fruits</b>	<b>82,702</b>	<b>75,788</b>	<b>26,544</b>	<b>29,122</b>	<b>21,667</b>	<b>33,372</b>	<b>76</b>	<b>271,271</b>
Vineyards . . . . .	15,158	41,081	2,470	54,219	6,051	—	—	118,979
<b>Total . . . . .</b>	<b>97,860</b>	<b>116,869</b>	<b>29,014</b>	<b>83,341</b>	<b>27,718</b>	<b>33,372</b>	<b>76</b>	<b>388,250</b>

### Fruit Trees by States.

The total number of large fruit trees in Australia in 1936, both in bearing and non-bearing is recorded as 32,554,171. By States, and quoting only the principal

	N.S.W.	Vic.	Qld.	S.A.	W.A.	Tas.	Federal.	Total.
Apples . . . . .	1,481,218	2,858,296	490,680	977,200	1,276,198	3,695,474	4,735	10,783,801
Bananas . . . . .	5,055,657	—	3,697,500	—	109,163	—	—	8,862,320
Oranges . . . . .	2,339,152	500,216	289,980	431,929	298,347	—	465	3,878,807
Peaches . . . . .	604,454	1,135,351	153,990	143,130	81,883	10,655	318	2,129,781
Pears . . . . .	325,137	1,070,513	20,250	168,045	102,217	317,288	395	2,003,845
Plums . . . . .	471,482	412,463	113,400	241,151	112,480	77,014	735	1,428,725
Apricots . . . . .	161,971	380,752	13,150	280,377	69,480	198,928	322	1,104,980
Other Fruits . . . . .	1,075,632	599,173	54,400	448,738	177,274	24,786	627	2,361,912
<b>Total, incl. all trees</b>	<b>11,514,703</b>	<b>6,956,764</b>	<b>4,833,350</b>	<b>2,690,570</b>	<b>2,227,042</b>	<b>4,324,145</b>	<b>7,597</b>	<b>32,554,171</b>

### Jams, Pickles, Sauces — 25 Factories Now.

A special report received from the Commonwealth Bureau of Statistics for the "Fruit World Annual," shows that in 1936 there were 125 registered factories manufacturing various forms of fruit products. The number of employees was 5,773 earning approximately £930,000 in wages in that year and producing jam, pickles, sauces and other fruit-containing commodities valued at £2½ million, exclusive of canned fruits.

As illustrating the distribution of the factories, it is noted that all States are reported in the following proportions:—Vic. 43 factories, N.S.W. 31, S.A. 18, Qld. 14, Tas. 10 and W.A. 9. Land and buildings necessary are valued at £1,125,204, whilst the machinery installed for processing in all forms is valued at £549,413.

The individual values quoted are as follow:—

James and jellies, production valued at . . . . .	£1,989,136
Pulpd fruit, production valued at . . . . .	275,171
Preserved fruit, production valued at . . . . .	2,070,290
Pickles (no return from W.A. and Tas.) . . . . .	134,189
Sauces (no return from W.A. and Tas.) . . . . .	662,733

**Total . . . . .** £5,181,510

kinds, an appreciation of the importance of the fruit industry to the Commonwealth can be seen at a glance, also the relative importance attached to each kind of fruit.

	N.S.W.	Vic.	Qld.	S.A.	W.A.	Tas.	Federal.	Total.
Apples . . . . .	1,481,218	2,858,296	490,680	977,200	1,276,198	3,695,474	4,735	10,783,801
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Other Fruits . . . . .	1,075,632	599,173	54,400	448,738	177,274	24,786	627	2,361,912

**Total, incl. all trees** 11,514,703 6,956,764 4,833,350 2,690,570 2,227,042 4,324,145 7,597 32,554,171

### Victoria.

The fruit-growing industry in Victoria, always an interesting study, reveals several changes during the 1936-37 year. Although the number of growers decreased by 91 to 6,621, the acreage under fruit increased by 1,163 acres to 75,169.

A comparison of production in the past two years shows that an increase was made in all varieties, as per the following table:—

	1935-36.	1936-37.
Large fruits (bush.) . . . . .	6,363,859	7,177,545
Berry fruits (cwt.) . . . . .	14,667	17,177
Nuts (lbs.) . . . . .	187,566	190,180
Dried tree fruits (lbs.) . . . . .	1,103,108	1,023,453
<b>Total . . . . .</b>	<b>7,666,200</b>	<b>8,408,355</b>

The increase over the previous year in the following main kinds was:—

Apples 455,902 bush., Pears 165,761 bush., Apricots (decrease) 170,969 bush., Oranges (decrease) 37,764 bush., whilst there was also a decrease in Apricots used for drying by 81,105 lbs. (over two-thirds less than in 1935-36).



# **Fruit Trees Fruit Trees Fruit Trees Fruit Trees**

**Best Quality at Most Reasonable Prices**  
**BOOK NOW for 1938 PLANTING**

WRITE FOR

*New Catalogs and Price Lists NOW READY with Many New Varieties*

## **JOHN BRUNNING & SONS**

**Somerville Nurseries - - Somerville, Victoria, Australia**

Orchards and Nurseries, 240 Acres.  
Private Cool Store, 17,500 Case Capacity.

ESTABLISHED 1866.

PHONES: Somerville 221, 252.  
Overseas Code: Bentley's Phrase Code and Private.

## **TUNG OIL MILLS LIMITED**

### **NOMINAL CAPITAL £20,000**

**DIRECTORS** — P. Armstrong (Armstrong Bros., Pty. Ltd., Builders), 103 Crown St., Sydney.

P. Wood (Joint Managing Director, Amalgamated Timbers Pty. Ltd.), Pyrmont, Sydney.

C. L. Wilson (Managing Director), 66 King St., Sydney.

**BANKERS**—Commercial Banking Coy. of Sydney Ltd., Sydney.

**AUDITORS**—Johnson, Edwards & Co., Wynyard St., Sydney.

**CONSULTING CHEMIST**—R. F. Boan, A.A.C.I., 185 Elizabeth St., Sydney.

**NURSERIES**—Robert Road Pennant Hills, Gosford, Bowen (North Queensland), and Norfolk Island.

We supply Tung Nursery Trees produced from known mature heavy bearing types of multi-cluster trees at a low price and on very easy terms of payment, and enter into a contract for 10 years to purchase from the grower on a semi-co-operative basis the resultant nut crops.

Last season we supplied approximately 60,000 trees to 137 growers situated in various parts of New South Wales, Queensland and West Australia, and during 1938 we have made preparations to supply 150,000 or more nursery trees all produced from Australian acclimatised stock. There is a safe, permanent and profitable market for Tung Oil with no danger of over-production. We have purchased all available Australian grown nuts produced in 1937 and commence the first commercial crushing in March, 1938. This will mark the commencement of a big development in Tung Tree growing in Australia. Already there are 324 farmers on our list who have established plantations. We give free expert advice on soil selection, suitable districts and on laying down and caring for plantations. Send to us for full particulars. There is room for 50,000 acres in Tung trees before Australia's consumption of Tung Oil could be satisfied. Make preparations now for next season's planting. We will help you.

## **TUNG OIL MILLS LIMITED**

**66 KING STREET, SYDNEY**

**Phone B 1378**

## FRUIT PRODUCTION IN AUSTRALIA (Continued).

## Western Australia.

The four main kinds of fruit exported from W.A. are Apples, Pears, Oranges and Grapes. The latter is a comparatively recent export fruit, but W.A. is proving it a good addition to the large fruits. Last year W.A. exported 61,745 cases of Grapes, a record quantity and an increase over 1936 of over 4,000 cases, in fact, Grapes provided the only increase in export fruits during 1937.

For the first time on record, W.A. Grapefruit has been exported and a development of this business can be anticipated: 102 cases were shipped to Ceylon, Port Said and Malta, and the experiment is reported to have been satisfactory.

W.A. exported, for the year ending June 30, 1937, 798,169 cases of fruit of all kinds. Apples represented by far the largest contribution, with 701,967 cases, followed by grapes 61,745 cases, Pears 31,111 cases, and Oranges 2,076 cases.

## Planting Continues.

As showing the faith of growers in the future of the fruit industry in Western Australia, it is noted in a report from Mr. G. W. Wickens, Superintendent of Horticulture, in the Journal of Agriculture, W.A., for September, 1937, the number of fruit trees imported from eastern States during the year ending June 30, 1937, was 538,737. Of these, bulbs and roots were 397,603, Apples 31,929, Apple stocks 15,000, Peach stocks 14,000 and Orange 10,645, whilst ornamental trees totalled 27,748.

W.A. still has to import large quantities of fresh fruits from eastern States, and in the year under review 23,840 packages of fruit and 6,674 bags of nuts were received. From Java, the main source of fruit from overseas, W.A. imported 3,401,834 lbs. of fresh Bananas, Pineapples, Mangoes and nuts, the former representing 3,225,700 lbs.

## Tomatoes.

Although Geraldton Tomatoes have made a place for themselves on the markets of the eastern States, no new

varieties have been evolved during the past year. Geraldton seems particularly suitable for Tomato growing, and produces early fruit that is welcomed before those in the east, especially Victoria, are ready. The flesh is firm and the Tomatoes carry well and open up in prime condition.

## Vineyards.

Some of the finest Grapes in Australia are produced in the Upper Swan district, both size and quality being obtained. In 1936 there were 6,051 acres under vineyards and 308,089 cwt. of fruit were produced; 430,941 gallons of wine were obtained, besides 44,912 cwt. of dried vine fruits.

## Tasmania.

The following review of the Tasmanian fruit industry is supplied by Mr. P. H. Thomas, Chief Horticulturist of the Department of Agriculture in Tasmania.

Situated in the more temperate latitudes, Tasmania has rightly earned her title of "The Garden State." Whilst possessing rich agricultural and pastoral areas, with valuable mineral fields, it is the fruit industries that have brought the island into prominence throughout the globe. Although producing nearly all the deciduous fruits, Apples rank as the most important crop, the total production in a normal season reaching 4,500,000 bushels.

Tasmanian Apples now find their way into almost all the important markets of the United Kingdom and Australia, and owing to the flavor and quality that is obtained under the cooler and slower conditions of ripening, the Tasmanian Apples retain a very important place on the world's markets.

## Apples.

The total acreage now planted with Apples is approximately 22,971 acres, from which an average crop of 4,500,000 bushels are harvested. Of this quantity 2,900,071 bushels were exported overseas, and 1,334,169 to Australian markets.




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Spraying  
Citrus Trees.

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## FRUIT PRODUCTION IN AUSTRALIA (Continued).

The principal varieties now in commercial production are—

Alfriston, Cleopatra, Cox's Orange Pippin, Crofton Delicious, Democrat, French Crab, Granny Smith, Jonathan, Scarlet, Sturmer and Worcester Pearmain.

### Pears.

The Tasmanian Pear crop, except for the canning areas in the Derwent Valley, is almost wholly grown without irrigation, and owing to the increasing demand for this fruit the acreage planted is being extended. There are many different kinds of Pears, but the Tasmanian grower is endeavoring to specialise in those which are favored. Fresh Pears may be obtained from March until the end of June. The most popular kinds are known as Beurre Bosc, Beurre d'Anjou, Winter Cole, Josephine de Malines, Winter Nelis, Doyenne du Comice, Packham's Triumph.

The total acreage now planted with Pears approximates 2,042 acres, the normal yield being 275,000 bushels. Of these 157,370 bushels were shipped overseas and 75,555 processed at the factories.

### Berry Fruits.

Next in importance to Apples are the various berries grown in the hilly country around Hobart. Here in the mountain gullies the conditions are ideal for the production of Raspberries, Strawberries, Gooseberries, Loganberries and Black and Red Currants. Visitors coming to Tasmania during the period from November to February can be assured of plentiful supplies of these luscious fruits, the flavor of which is enhanced by being grown under natural conditions without irrigation. The processing of our berry fruits into jams and preserves is an important industry and the products find their way into most of the important markets of Australia, Europe, and the Near East.

The total acreage planted with berry fruits is over 2,800 acres. Whilst a certain quantity of fresh fruit is used for dessert purposes, the bulk of the production is invested into jams, jellies and preserves.

During the season the following quantities of berry fruits were processed at the factories:—

	Tons.
Raspberries .. .. .	3,246
Strawberries .. .. .	300
Loganberries .. .. .	168
Black Currants .. .. .	1,174
Red Currants .. .. .	57
Gooseberries .. .. .	355
Cape Gooseberries .. .. .	5

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FRUIT PRODUCTION IN AUSTRALIA (Continued).**Stone Fruits.**

These principally comprise Apricots, Plums and Cherries, and after supplying local demands, practically the whole output is converted into jams and preserves.

The Apricot is perhaps the most important of these fruits, and under Tasmanian climatic conditions a very fine flavored quality fruit is produced which is particularly suitable for canning purposes and is very popular on the markets.

The following are the particulars regarding these fruits:—

	Acreage.	Average yield. Bushel.	Processed at factories. Bushel. Tons.
Apricots . . . . .	1,251	120,000	71,820
Plums . . . . .	520	110,000	65,000
Cherries . . . . .	92	3,000	100

Tasmanian fruitgrowers are generally alive to the competitive spirit that exists to-day on the world's markets, and aim to build up a reputation with their products that will be a guarantee of dependability by ensuring that only the highest quality fruit is produced.

**New South Wales.**

Although New South Wales ranks second to Victoria in the acreage under fruit production with a registration of 97,860 acres, her production of citrus fruits is her outstanding contribution. In 1936 she produced a total of 2,826,284 bushels of all varieties. Bananas represent her next highest production with 1,609,789 bushels in 1936, followed in order of production by Apples, Peaches, Pears, Apricots, Prunes and Plums.

Her exports of Apples to the United Kingdom and Europe in 1936 are recorded at 98,000 cases, and Pears at 30,000 cases.

This State contributes much to the fruit industry in Australia in the matter of experimental orchards scattered throughout the fruit production districts. These are located at Bathurst, Wagga, Richmond, Grafton, Leeton, Glen Innes and Narara and are developing much information upon propagation of various fruits, pest and disease control, fertilisation, soil erosion, cross fertilisation, selection, new varieties and testing imported varieties, bud



Drying Prunes in the Murrumbidgee  
Irrigation Areas.

selection, stock investigation, pollination; tropical fruit investigation and a host of other problems having an intense value to the industry throughout the Commonwealth.

**South Australia.**

Taking all kinds of fruit into consideration, South Australia ranks fourth of all States, being second to Victoria in total Grapes produced and producing more wine than all other States combined.

She produced in 1936, 13,023,587 gallons of wine, and dried fruits valued at £757,317. In the larger fruit varieties, Apples constitute her greatest production, followed by citrus, Apricots, Pears, Plums, Peaches and Cherries in that order, whilst she produced 759,584 lbs. nuts of all kinds and 8,619 cwt. of berry and other small fruits.

During 1936, South Australia produced 939,240 bushels of Apples and 228,223 bushels of Pears, making a total of 1,167,463 bushels of Apples and Pears.

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## FRUIT PRODUCTION IN AUSTRALIA (Continued).

The total value of overseas exports in fruit for 1936/37 was £1,632,662, being slightly above the previous year. Dried fruits represented £513,844, wine £955,033, and Apples £85,858. She also supplied about £600,000 in wine to other Australian States.

## Research Work.

The various Departments of Agriculture in Australia, as well as the Commonwealth Government, State Research and Experimental Stations, Council for Scientific and Industrial Research and Fruitgrowers' Organisations all recognise the necessity for and the value of research work in relation to the fruit industry.

Subject as the industry is to climatic conditions, incursions of insect pests and the necessity of maintaining both production and quality, experts and scientists are for ever on guard to protect and benefit the industry. Whilst the various State Departments watch cultivation and production methods, they also make their officers and laboratories available for all phases of investigation and contribute much to the industry. It can be said that each officer is keen on his job and is constantly fighting or assisting nature in many ways.

## In South Australia.

South Australia has three State experimental orchards and many private orchards upon which growers are co-operating with the Department. Berri orchard, in the Murray Valley Irrigation Area, consists of 80 acres and carries vines, citrus, Figs, stone fruits and Almonds. The matters under investigation include the time and method of cincturing, training, pruning, manuring Grape vines. Citrus studies include field trials, rootstocks, reduction of rind blemish, the correction of mottle leaf and storage

and transport. Apple and Pear problems attacked include frost protection, control of codlin moth and other pests.

At the Blackwood orchard field trials have been recorded for 25 or 30 years. Other investigations include codlin moth, Apple scab, and fertilizer trials. At Fullarton, citrus stock trials are pursued, whilst on co-operating orchards all pests are studied, fruit tree nutrition, red scale on citrus, irrigation, frost protection, and other relevant problems.

In all States similarly valuable work is going on all the time and too much credit cannot be given to those whose interest, care and knowledge are being devoted to improving conditions in the industry.

## Council for Scientific Research.

The C.S.I.R. has a remarkably elastic functioning organisation, decentralised so that particular problems may be studied where they occur. Its general organisation covers five separate departments under experts in the various sections, such as:—Plants; Economic Entomology; Annual Health and Nutrition; Soil Research and Forest Products; but these sections do not cover all of the Council's activities, since it works with the Departments of Agriculture in all States.

The laboratory work of the Council is probably equally as important as the field research. For instance, to fight pests one must know their life history and understand all about them before they can be effectively fought or controlled. This is only one side of laboratory research work, but an important one to the fruit industry. Soil survey work is another laboratory research service, but there are many others through which the laboratory contributes to the betterment of fruit-growing, packing, carrying and distributing.

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# Pollination Studies in New South Wales

Resume of Work with  
Pome and Stone Fruits

(By F. T. Bowman, B. Sc.Agr., M.S., N.S.W.)

**S**PECIFIC investigations in fruit pollination were commenced in New South Wales in 1927 with Pears, at first with the variety Packham's Triumph. Since then the work has been extended to include all the leading varieties of Pears as well as of Apples, Cherries, Plums and Almonds.

This work is being carried on, usually in co-operation with plant breeders at different centres, with the double objective of ascertaining the pollination requirements of different varieties and of raising seedlings in connection with a programme of fruit breeding.

## Self Pollination.

The importance of suitable cross-pollination may be appreciated from the results of self pollination tests with the leading varieties which may be summarised as follows:—

**Cherries** have consistently failed to set from self pollination.

**Plums:** Most of the leading varieties of Plums are self sterile, although some are sufficiently self fertile for commercial cropping.

**Almonds:** Varieties of Almonds are mostly insufficiently self fertile for solid block planting.

**Apples and Pears:** The majority of Apple and Pear varieties fail to set commercial crops from self-pollination. The degree of self fruitfulness obtained varies with certain conditions of growth and environment. Although cross-pollination is not essential for the setting of a few varieties of Pears and Apples, there is experimental evidence that improved fruit qualities always make cross-pollination desirable.

## Cross Pollination results with Pears and Apples.

Pears and Apples are polyploid plants of hybrid origin in which the chances of incompatibility occurring on cross-pollination between different varieties is more or less remote and cross compatibility ranges from good to poor.

Some of the varieties used, such as Packham's Triumph and Packham's Late Pear and Granny-Smith and Tasma Apples, are of Australian origin, and no knowledge on exact pollination behaviour of these varieties was available previous to these tests.

The main varieties of Pears in New South Wales are Williams, Packham's Triumph, Beurre Bosc, Winter Cole,

Winter Nelis and Josephine. These have been found to be cross fertile with one another and with a number of other varieties. Some thirty varieties of Pears have been included in prolonged pollination tests. Low cross fertility was found only in the following cases:—

1. Packham's Triumph, when pollinated by P. Barry.

"	"	or	Jargonelle
"	"	or	Windsor.

has given poor sets and low cross fertility.

2. Williams and Seckle, in American experiments, were said to be cross incompatible, but from tests in New South Wales this appears to be only another case of low cross compatibility since a few seeds and two seedlings were obtained from this cross.

3. There are also indications, subject to further proof, that Winter Bartlett is poorly cross fertile with Winter Cole and Beurre Bosc.

The leading varieties of Apples, Granny-Smith, Jonathan, Rome Beauty, Delicious and Tasma, are quite inter-fertile. Good cross fertility has been found in a large range of Apple crosses except in the following cases. Some forty varieties of Apples have been included in pollination work.

1. Winesap, Stayman and Gravenstein were poorly cross-fertile with all the main varieties.

2. Granny-Smith pollinated by Statesman or by Dunn resulted in poor settings. The reciprocal crosses are also of very low fertility.

3. Pollinations between strains or bud sports of a variety such as between Delicious and its bud sport Lalla, or between the different strains of Rome Beauty have given low fertility.

The above cases of low fertility affect varieties of Apples which are grown to a fairly large extent in some localities in N.S.W. The experiment results confirm examinations in the field where these combinations occur.

## Cross Pollination Results with Cherries and Plums.

In New South Wales sweet Cherries are grown to the practical exclusion of Duke and sour Cherries. The leading varieties are St. Margaret, Florence, Napoleon, Early Lyons and Noble for which there was practically no previous pollination date.

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In sweet Cherries incompatible groups occur, due to the presence of sterility factors and some of the principal varieties grown here, are involved in such intersterile groups. All the varieties within a group are intersterile with one another, but are interfertile with all varieties outside the group. Up to the present thirty-three varieties have been used for pollinisers on the main varieties mentioned above.

Two important intersterile groups affecting important varieties were found, viz:—

- (a) St. Margaret, Noble, Black Republican, Black Bigarreau.
- (b) Early Lyons, Mezel, Twyford.

Some of the main intersterile groups found in English, Continental and American experiments were confirmed, so that the principal intersterilities to avoid in Cherry culture are (a) and (b) above plus the following:—

- (c) Napoleon Riverchon (often misnamed Pelissier), Bing and Lambert.
- (d) Bedfords Prolific, Early Rivers, Black Eagle and Knights Early Black.
- (e) Early Purple Gean, California Advance and Rockport.

#### Results of Five Years' Study.

It will be seen that all the main Cherry varieties except Florence are involved in some incompatible group. Special care is therefore necessary for Cherry pollination and as the result of a five year study of the situation, the following pollinisers are recommended under New South Wales conditions:—

- (a) For St. Margaret, Noble, and Black Republican; Blackboy and Windsor.
- (b) For Napoleon: Florence.
- (c) For Florence: Napoleon.
- (d) For Early Lyons: Burgsdorf, Early Rivers, and Eagle.
- (e) For Early Rivers: Burgsdorf, Early Lyons.

Experiments showed that amongst the number of compatible varieties used, none was a measurably better polliniser than others.

The correct identity of Cherry varieties is of great importance for the correct application of pollination results to Cherry culture.

#### Varieties of Plums.

The principal varieties of English Plums (*Prunus domestica*) cultivated in New South Wales are, President, Grand Duke, Angelina, Robe de Sargeant, Prune d'Agen, Pond's and Giant, all of which are absolutely or practically self sterile except Pond's and Giant. These two have given commercial settings from self pollination. Nevertheless Pond's has been noted to be a poor cropper under certain conditions and it is highly probable that suitable cross-pollination will improve its cropping ability. This may be predicted from the pollination tests in which the fruit setting of highly self fertile Plums is always increased by cross pollination.

Domestica Plums are hexaploids by no means so complex as Apples and Pears, in which are to be found different ranges of self and cross fertility as well as incompatible groups.

The varieties of Japanese Plums (*Prunus salicina*) also show ranges of self fertility. Although Santa Rosa has been found to be consistently self fertile, some other varieties, e.g., Cyco smomo, Narrabeen, Chalco, have been found to be self-sterile.

Representing the Cherry Plum type (*Prunus cerasifera*) Wilson's Early, which is a variety of local origin, is self-sterile. It is cross fertile with other cerasifera Plums, such as Duffy's Early, Gem and Jewel, as well as with several Japanese Plums.

No new incompatibilities have been so far encountered in the crossing of numerous Plum varieties in New South Wales.



A nicely laid out Apple orchard at Bright, Victoria.

# Soil Fertility in the Orchard

(By Frank M. Read, M.Agr.Sc., Chief Inspector of Horticulture, Victoria.)

IT is well to consider at the outset that soil fertility in this country is the basis of our national prosperity and, perhaps, of our national existence.

It has been said, and it is probably true, that many of the ancient civilisations fell through failure to realise this, particularly at that stage in their development when they learned the trick of extensive irrigation, and there is no doubt that, in the old world at the present time, as a result of this accumulated experience, the fundamental importance of soil fertility is better appreciated by the individual grower than it is in this country. Evidence for this can be seen in the general inclusion in land leases of clauses providing for the maintenance of soil fertility and the frequent payment at the conclusion of leases to the previous tenant for the computed residual value of soil improvement practices applied by him during his tenancy. Such things as this unfortunately find no counterpart in this country.

An awakening sense in this regard, however, can be seen in the recent setting up, as a result of public agitation, of a soil erosion committee to enquire into that phase of soil fertility, and it is hoped that orchardists will contribute their part to the work of arresting soil erosion. Although soil erosion forms no part of this article, it is of interest to mention that from time to time several experienced fruit growers in hilly country have told me that they would not plant an orchard on a hillside if they did not have control of the gully at its base, for their experience had shown them that it was necessary to re-soil the orchard from time to time from this source. Clearly soil erosion was at work in these cases, and probably could have them substantially reduced or eliminated by different methods of orchard management.

We have had definite trouble too in the irrigated soil of Northern Victoria, where the improper use of irrigation water and an imperfect selection of soils and crops have brought about conditions so disastrous that they could not be overlooked, but it is considered that of far greater importance than erosion and alkali trouble is the less obvious gradual reduction in soil fertility over a very wide area, and it would seem desirable that some body should be set up and given the responsibility of seeing that the soil of this State should improve as generation succeeds generation instead of a gradual decline which is too frequently evident.

One cannot help feeling that the difference in productivity from orchard to orchard is usually greater than that from farm to farm, and it is my opinion that in such intense cultivation, the cumulative effect over several years of good soil management of one man contrasted with the poor practices of his neighbour in very large measure

ARTIFICIAL AND GREEN MANURES —  
TREE REQUIREMENTS — SYMPTOMS  
OF DEFICIENCY — IMPORTANCE OF  
BALANCE — METHODS OF APPLICATION.

accounts for such differences. I would say, at the risk of criticism, that sustained effort by a grower to improve soil fertility of his orchard requires personal qualities of long-sightedness and determination. By comparison, his other problems, such as those associated with pest control, are usually obvious, and he can rarely avoid taking the necessary action. To improve soil fertility a grower should consider the whole problem, decide on a line of action, and follow it for a number of years before expecting noticeable results. The frequent change from one idea to another which characterises many growers is most unfortunate.

The following remarks on soil fertility are designed to present the broad problem in the hope that growers will consider it from a fundamentally important point of view. It is not possible to give in general terms details for every orchard property. While the grower must largely decide the details himself, he has at his call the services of the local Supervisor and of his Department of Agriculture, and he should avail himself of the personal advice to be obtained from these quarters.

## Organic Matter.

Everyone is agreed that, for a Victorian orchard to maintain fertility, the supply of organic matter must be maintained. In the natural state the soil supports a varied population. There are first of all the trees, secondly beneath them are the surface plants, and within the soil are the teeming millions of tiny creatures, far too small to be seen by the naked eye, and known under the general name of soil organisms.

Orcharding, as it is generally practised in Australia, by clean cultivation and frequent stirring of the soil in the hot Summer months, undoubtedly tends to upset the balance of nature by the elimination, or, at all events, great reduction in the growth of the second group, the surface plants. The life and decay of the surface plants provides most of that organic matter which is required by the soil organisms in order that they may flourish, and it therefore follows that as the surface plants are reduced and the soil organic matter or humus is depleted the soils population of organisms declines. The gravity of this change may be understood when it is realised that it is principally due to the life processes of the soil organisms that the soil nutrients become available to the trees, and so, as their number falls, soil fertility inevitably declines also.

It can therefore be taken as a maxim that the yearly ploughing under of a liberal amount of green stuff is a first essential in orchard management, and it is almost as true that where the growth of natural green stuff is abundant and is ploughed under suitably, the position on that orchard is generally quite satisfactory.



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**SOIL FERTILITY IN THE ORCHARD (Continued).****Provision of Green Manure.**

There would appear to be three main methods of providing soil humus in addition to the application of farmyard manure and straw, and so on:—

1. We can sow a crop of Peas, Beans, Oats, Barley, Rape, or, in fact, any crop which will grow well and give a good bulk within a few months. In general, the leguminous crops are preferable when they will grow strongly; but if they will not thrive the crop most suitable to the district should be sown. It is essential that such a crop be sown early, so that it secures a good start before the cold weather comes. March is the best month from this point of view. I know many orchardists will say that they rarely have time to put in a green crop, and that, any way, harvesting operations extend into March, and later still, so that if a crop were sown it would be trampled on and spoiled. It is undeniable that some orchardists do, nevertheless, manage to sow the crop satisfactorily, generally by doing alternate rows in alternate years so that there is still room to reach every tree without walking or driving over the sown area.

2. We can establish such a plant as Subterranean Clover, which will reseed itself naturally. This has been done with apparently satisfactory results. There does not appear to be much difficulty in reseeding Subterranean Clover when it is ploughed under, as is the general rule at present, in September or later, for the plants go on maturing after ploughing, and until the surface is broken down by the cultivators and harrows. But the tendency in many districts now is toward earlier ploughing to avoid ascospore infection in the control of black spot of Apples, to improve conditions for fruit setting, and to minimise competition for soil moisture between trees and green-stuff, and so on. If this desirable tendency be followed, therefore, it would be wise to leave the unploughed strips of Clover between the trees until the seed has formed.

3. The third alternative which may be useful as a stop-gap, but which would not appear to be as permanently satisfactory as the two above, is to allow the miscellaneous herbage to grow by ceasing cultivation in late February or early March. This can probably be encouraged by top-

dressing with artificial fertilisers in Autumn. Super, 2 cwts. per acre, or sulphate of ammonia, 1-2 cwts. per acre, have in general given most noticeable results to date. The final choice between these two fertilisers should be made after trial. On the whole, super. tends to be more generally effective for this purpose in the northern orchards, while a nitrogenous manure, such as sulphate of ammonia, is more usually effective in the south of the State. These results, however, depend largely on the type of herbage. Clovers seem to prefer super., while Capeweed responds more usually to nitrogen. The results from grasses are variable.

**Manurial Requirements of the Tree.**

The grower too often bases his manurial practice on his estimate of the loss to the trees and the soil occasioned by the taking off of succeeding crops. This is quite an unreliable method, for it can be taken that, as a general rule, comparatively little of the soil nutrients go into the actual crop, most being required to develop the framework and other growth features of the tree.

"Which fertiliser makes fruit?" is a question sometimes asked by growers. In answer it may be said that no fertiliser makes fruit as distinct from growth, but that any one or all of the fertilisers may affect the growth characters of a tree, and thus indirectly affect its yield.

There are very good grounds for believing that if tree growth be satisfactory, yield automatically will be so; from which it would follow logically that growers should decide their manurial practice more upon the appearance of their trees, and less upon the crops they have borne or are expected to bear.

Where fertilisers further a more healthy growth and appearance in trees previously unsatisfactory in health, they usually improve the yielding capacity of the tree also. When tree health suffers, the grower must apply fertilisers to conserve his main asset.

It is not intended to convey the impression that increased growth in all cases will be accompanied by increased yield. This would only be so in trees previously showing too restricted growth. The most fruitful condi-



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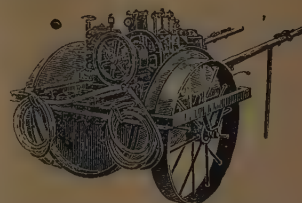
With extension frame and extended bridle for orchard work; or without extensions, for vineyard work.

Galvanised fruit-shield for citrus work also available.

## SUNSHINE

**Power  
Spraying  
Plant**

*Equally Efficient  
for Orchards,  
Vineyards and  
Row Crops*



Comprises the tested and reliable Sundial 2 h.p. Petrol Engine, connected by gear drive to a pump featuring porcelain-lined cylinder, extra large air chamber, accessible double-wear valves, strainer and Y-hose connection. Powerful enough to supply six spray rods simultaneously. Engine can be used for belt work. Mounted on a two-wheeled carriage which has strong frame of welded steel, and shafts for one horse.

Including underslung 100-gallon wooden vat, which has two-blade oscillating agitator. Large filler—accessible, splash-proof, with quick action opener and easily removed strainer. You fill at convenient height (2ft. 9in.), thus avoiding lifting strains.

Also, for use on lorry or dray, same engine and pump as above, but mounted on strong frame of channel steel. Fifty gallon copper tank, with hose connection to pump. Or an ordinary barrel may be used in place of copper tank if desired.

## SUNMASSEY

**The New  
Orchard  
Cultivator**

With Pole and  
Swings or  
Forecarriage.



With 7, 9, 11, or 13 tynes, for orchard or vineyard work. Spring or rigid tynes. Unexcelled for destroying weed growth.

Heavy pressure can be placed upon the sections by means of the C-Spring. One lever raises and lowers both sections.

Special leaflets give full details of each implement. Ask the local agent for your free copies, or write direct.

## SUNSLIDE

**Spring  
Tyne  
Harrow**

With Disc  
Control for  
Orchard Work.



Disc control permits the draught being set to the side so that the horse walks clear of the trees while the harrow cultivates close up to the trunks.

Illustration shows tynes in raised position, when frame slides along on its runners.

1 horse, disc control, 9 tynes (as illustrated).

1 horse, with handles (no discs), 9 tynes.

2 horse, with drawbar, 17 tynes.

**H. V. McKAY  
MASSEY HARRIS  
PTY. LTD.**

**SUNSHINE HARVESTER WORKS . . . SUNSHINE, W20**

**ALSO AT . . . MELBOURNE, SYDNEY, ADELAIDE, PERTH AND BRISBANE**

## SOIL FERTILITY IN THE ORCHARD (Continued).

tion in fruit trees is one of medium growth, with good healthy appearance of leaves and wood.

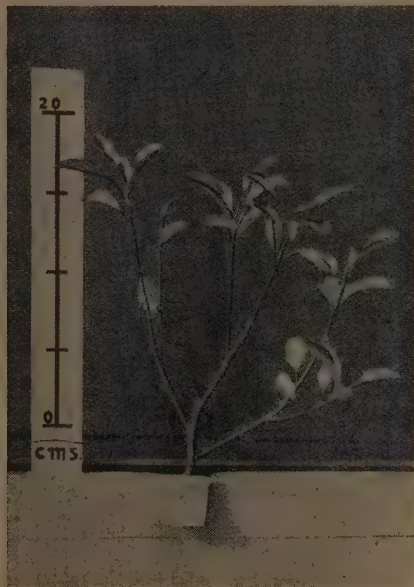
The subject may be viewed from a slightly different angle by asking and answering a further question: "In the event of a shortage of any element is the growth and foliage first affected, or does the yield decline while the tree to all other appearances remains normal"? The available evidence indicates that the first signs of a mineral deficiency are to be seen in the foliage. Experiments on Apples at Upper Beaconsfield, on a poor soil, showed that unmanured or improperly manured trees do not make anything like the amount of growth made by

effects accompanying starvation of the animal body, where the vital organs remains perfectly sound until a very late stage in the process of starvation, which leads again to the very important conclusion previously mentioned, that if the tree is growing in a healthy fashion it is not likely that the yield of that tree will be increased materially by applications of fertilisers.

On the other hand, it points to the necessity for maintaining healthy growth, for only when that is obtained will the tree continue over a period of years to increase its bearing surface, and thus its ability to carry larger and larger crops.



Potash deficient tree showing defoliation of tips of affected shoots.



Nitrogen deficient tree showing very reduced growth and defoliation commencing at base of the tree.

(Blocks illustrating this article are by courtesy Vic. "Journal of Agriculture.")

those on adjacent manured plots, nor is the appearance of the foliage satisfactory; but during the trials the yields of the unmanured trees did not decline seriously by comparison, although it was obvious that if faulty growth conditions had been allowed to persist they must soon have resulted in low yields from the actual dying back of the trees from the tips. The trials being on a private orchard were discontinued at this stage.

In England the disease known as Leaf Scorch, which has been associated with potash deficiency, has been extensively studied. It has been found that, in the case of Plums, for instance, the deficiency is marked in leaves and stems, which, when analysed, are seen to contain very much less potash than normal specimens; but this deficiency is not nearly so marked in the pulp of the fruit, while in the fruit kernel of the affected tree the potash content is practically normal—Victorian experience confirms this. This is a further indication that when the tree is starved of any particular element—in this case, potash—the leaves and shoots suffer long before the vital organs—the fruit, and seed. This is in accord with the

There are orchards on soil quite rich enough to supply the whole mineral needs of the trees, and on such soils growth will be healthy without manure, while the benefit to be secured from fertilizers would be negligible. There are, nevertheless, many soils which will not give the growth desired, and on these the fertilizers suitable to them will prove of inestimable benefit.

There is room for a great deal of experiment, not only in the trying out of fertilizers on orchards previously neglected, but also on heavily-manured orchards on rich soil, where it would be of great interest to leave some trees entirely unmanured for comparison.

## Symptoms of Deficiency.

In the case of apples the experiments conducted in this and other countries enable the appearance of the trees to be used as a fairly accurate guide to the exact fertilizer to be added in each case of faulty growth. Lack of nitrogen results in very restricted growth, reddish bark, small yellow-green leaves, which develop bright yellow tints before falling and fall, particularly at the base of the tree, very early.





## Chilean Nitrate of Soda

**Promotes Vigor  
Increases Yield  
Improves Quality**

The natural Nitrate Nitrogen Fertilizer with the vital elements in Nature's own blend and balance.

**GUARANTEED PURITY 98/99%**

**100% EFFICIENT**

Prevents soil acidity. Is completely soluble. The natural Nitrate Nitrogen being immediately available to the plant.

NOT A SINGLE GROWER WHO HAS USED IT HAS ANYTHING BUT PRAISE FOR CHILEAN NITRATE OF SODA.

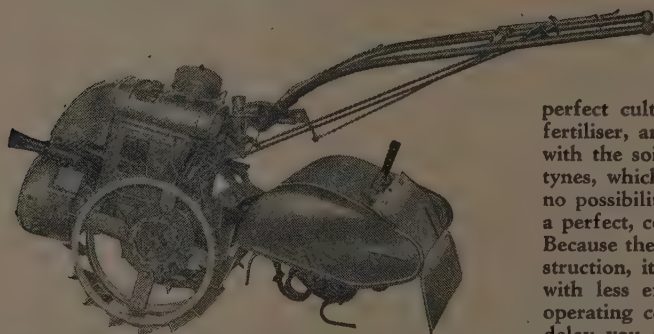
**Fruit, Vegetables, Pastures**

ALL MERCHANTS — ENQUIRIES.

**Chilean Nitrate of Soda**

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## MAXIMUM Results from your Orchard



**T**HE Rototiller will cultivate from 1 to 12 inches deep. Available in sizes from 3 h.p. upwards. **Price from £90**

**"SIMAR" ROTOTILLERS**

Write for particulars.

Arrange to-day for a **FREE Demonstration**

**Sole Australasian Distributors :**

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SOIL FERTILITY IN THE ORCHARD (Continued).

Lack of phosphoric acid under experimental conditions, although it has never been noted in the field so clearly as in the case of nitrogen, results in poor growth, small and very narrow dark green leaves, often quite bronze, with a tendency to develop purple coloured margins. These leaves usually develop very bright tints before falling. They tend to defoliate very early, and bud burst in the spring is usually very delayed. Dying of buds is very prevalent.

Lack of potash does not restrict growth apparently as much as either of the former two, but renders the leaves susceptible to severe scorching around the margins and the development of a flat green colour throughout. It also causes early defoliation from the tips of the shoots on which marginal leaf scorch has been pronounced. This deficiency is apparently very widespread in England, and occurs occasionally in the field in Australia.

Recently, pot experiments on Pears were added to the existing work on Apples, and in the first year, it can be said, the symptoms of deficiency of nitrogen and phosphoric acid seem to be substantially similar to those described for Apples. It is as yet too early to comment on the symptoms in Pears for deficiencies of the other minerals being studied.

Further, several surface plants which occur naturally, as weeds in Victorian orchards or as sown green crops—comprising: Cape Weed, Sorrell, Oats, Barley, Tick Beans, Peas and Lupins have been subjected to deficiency treatments and on the whole it is striking that they resemble in leaf symptoms Apples, Pears and other plants previously worked with:—

Lack of nitrogen, except in the case of Legumes, Peas, Beans and Lupins produces very restricted growth with small leaves and the characteristic yellow-green leaf colour.

Lack of phosphoric acid causes restricted growth with small narrow dark-green foliage liberally tinged with purplish-red colours particularly around the margins.

It is of great interest and of greater practical importance that the symptoms should be so generally similar over such a wide range of plants. This work is proceeding.



Potash deficient leaves (front and back) showing the characteristic marginal scorching which usually develops in late Summer.

**Importance of Balance.**

One of the most important developments of recent years has been the conception of balance in fertilizers, and it appears probable that the balance existing between the various nutrients present in the soil is more important by far than the actual amounts. As an instance, let us consider leaf scorch of Apple leaves, to which we have referred as a symptom of potash deficiency. Strictly speaking, it appears to be a symptom of bad balance between nitrogen and potash, and it may be corrected by either increasing the potash or by lowering the nitrogen. In certain cases in England the trouble has been corrected more rapidly and more efficiently by simply allowing the grass to grow beneath the trees, and so lowering soil nitrogen, than by applying to the soil quite heavy applications of sulphate of potash. Several other cases of balance have also been studied, and sufficient is known to support the view previously expressed that balance is a most important consideration.

In practice this is reflected by the great increase in the use of complete fertilizers, and the compounding of these mixed fertilisers along lines which make them much more truly balanced than the type of complete fertilizer to which horticulturists were accustomed, up to, say, ten years ago, or even less.

**MINOR FERTILIZER ELEMENTS.**

It was freely predicted ten to fifteen years ago, that attention to what are sometimes arbitrarily called the "Minor" elements in nutrition would be repaid by results of value and the prediction is coming true.

The use of Zinc in Southern Australian citrus groves is a case in point. Much of the leaf mottling of citrus is being corrected by the application of Zinc, usually in the form of a spray on the foliage:—

10lbs Zinc Sulphate.

5lbs Lime.

100 Gallons Water.

or somewhat less effectively, as an application to the soil of: 10lbs of Zinc Sulphate per tree.

Quite recent observations suggest that Zinc may give a response in certain northern Victorian areas on Apples too, and incidentally on Wheat.



Nitrogen deficient leaf of yellowish green throughout growing season (right) and bright yellow at defoliation (left).



**SOIL FERTILITY IN THE ORCHARD (Continued).**

Again in New Zealand, Tasmania and parts of New South Wales the use of Boron has given striking results in the correction of the conditions associated with internal cork of Apples, when Borax has been applied as a soil dressing, or has been injected into the trees.

While this condition does not occur in Victoria in the form described for the localities that have been given a response and the use of Boron therefore, is not able to be recommended in this state. The position is interesting workers in this field and trials are being made.

**General Recommendations.**

There is still room for research and improvement of mixed fertilizers. Variation in soil condition from orchard to orchard, and district to district, will make necessary for a long time to come a fair degree of approximation. In Victoria the use of complete fertilizers on pome fruits is on the whole recommended, except in cases where a definite deficiency is established by careful observation. For instance, where tree growth is very poor indeed and leaves are small and yellowish, a nitrogenous fertilizer such as sulphate of ammonia or nitrate of soda may be used alone for a time until the trees improve. Again, if leaf scorch of Apples were to occur seriously the use of potash alone would be desirable until such time as this symptom of potash deficiency had disappeared.

Stone fruits are most responsive to nitrogen, and if their growth is poor, nitrogen alone is the best fertilizer to use; but carried too far, nitrogen manuring on such fruits especially Peaches, tends to a higher susceptibility, to such fungus diseases as Brown Rot. When, therefore stone fruit trees are growing well it would be better to use a complete, rather than a straight nitrogen fertilizer.

For Spring application to deciduous trees, 3-5 lbs. of 2:2:1 mixed manure, which contains 2 parts of superphosphate, 2 parts of sulphate of ammonia, and 1 part of sulphate of potash is to be recommended, except when growth is very restricted and leaves are yellowish. In such cases 3-5 lbs. of sulphate of ammonia is to be preferred for a year or so, until growth improves. The best time is 4-5 weeks before blooming.

Citrus trees respond to nitrogen, and while it is still a matter on which experiments now proceeding may throw a new light, the only fertilizer which can really be recommended is nitrogen applied at a rate equivalent to 3-5 lbs. per tree of sulphate of ammonia in Spring, and again in Autumn, just before the growth periods.

The quantities of fertilizer to be applied will vary with tree size, and the suggestions refer to medium-sized trees.

For autumn broadcasting or drilling in with the green crop, superphosphate or sulphate of ammonia should be used at the rate of 1 to 2 cwt. per acre, in accordance with the conditions previously discussed.

Where soil humus is maintained in the manner described previously, the most satisfactory type of fertilizer to use is the readily soluble quickly-acting form.

Nitrogen, in the form of sulphate of ammonia; phosphoric acid, in the form of superphosphate; and potash,

# STEPS to Better Fruit Growing



CULTIVATION : DRAINAGE

PRUNING : SPRAYING

GREEN MANURING

NITROGEN : PHOSPHATES

**P O T A S H**

An Advertisement of

PACIFIC POTASH, LIMITED  
Box 3843.T, G.P.O., Sydney, N.S.W.

F20/37

**POTASH MAKES all THE DIFFERENCE**

in either the sulphate or muriate (except in the saline areas, where the muriate should not be used) should, singly or in combination, supply the needs of most orchards. Organic types of fertilizer are more necessary in intensive market gardening.

#### Use of Lime.

Although traditionally desirable, its application has not been proved, so by actual experience in Victoria and its price is too high to be recommended, the dressings of 1-2 tons per acre usually advocated; but where sulphate of ammonia is used an equal amount of lime should be applied, not necessarily immediately, but preferably in autumn. This will check any tendency to increased acidity.

Where green crops or natural herbage show the effects usually associated with sour soil and well-known to growers, dressings at rate of 2 ton per acre on small trial areas might reasonably be tried to see if greenstuff can be appreciably improved.

There is a general belief that lime liberates potash, but it is extremely doubtful if this occurs appreciably in most Victorian soils and such liberation would not justify the use of lime in this state. If this is the growers objective, he would be better advised to apply potash fertilizer.

#### Methods of Application.

Having decided on sound lines that one or more artificial fertilizers are required, the grower is still faced with problems of great magnitude, for it does not necessarily follow that by applying them to the soil they are actually caused to be absorbed by the tree's roots. In fact it is certain that very little of the fertilizer applied is so absorbed,

even under the most favorable conditions. There are several reasons for this. Firstly, the root system of the average orchard tree is situated in a zone some distance from the surface, and the fertilizer must penetrate to this zone through a blanket of surface soil. During its progress nitrogen tends to be rapidly absorbed by the roots of the surface-growing plants, but is otherwise able to move downward without much obstruction.

Phosphoric acid and potash, however, move downward only with great difficulty. Chemical reactions rapidly convert the soluble phosphoric acid into an insoluble form, and the potash, particularly in those soils in which potash is necessary, is absorbed by the clay particles very rapidly indeed, and held there in a form no more available to the tree than much of the potash previously in the soil. It is important therefore that, in applying fertilizers, they should be placed as deeply as possible, either by being broadcast and then ploughed under immediately, or by being placed in deep furrows.

In short, every means at the orchardist's disposal should be used to place the fertilizer in the actual effective root zone. From this point of view irrigation water, or liberal falls of rain, are of the greatest importance, and should be fully exploited to wash down soluble fertilizers.

#### Good General Orchard Management.

In conclusion, a warning should be given that the problems of soil fertility do not reside completely or even mainly in the use of artificial fertilizers. Too often the grower is apt to regard artificial fertilizers as a panacea for all the ills to which orchard trees are heir. But the truth is that at best they are but a subsidiary measure to

## "CORK" DISEASES CURED!

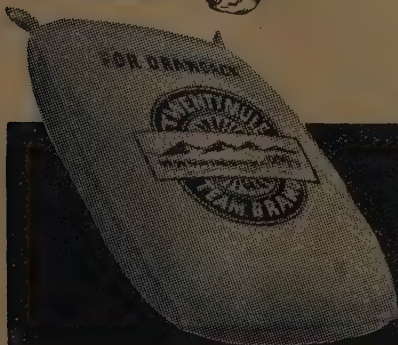


**Drought Spot - Internal Cork - Corky Pit - Corky Core and Crinkle** have BEEN PROVED to be caused by lack of boron and have been DEFINITELY CURED by broadcasting borax on the ground around the trees. Borax fertilization has increased the average crops of saleable fruit in one typical case from 3.61 to 10.6 boxes per tree in ONE year.

Are you getting a maximum crop? If not, spread "Twenty Mule Team" Borax around all trees (about 3 feet from base)—either immediately after blossoming or in autumn. Approximate quantities 46 lbs. to the acre.

The most satisfactory results are obtained with "Twenty Mule Team" brand Borax, guaranteed 99.5 to 100% pure.

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Short & Co., Auckland, C.I.  
Swift & Co. Pty. Ltd., 26 Clarence Street, Sydney.

**BORAX CONSOLIDATED LTD.,** Regis House, King William Street, London, E.C.4.



**SOIL FERTILITY IN THE ORCHARD (Continued).**

all those items of good orchard practice and intelligent soil management, which keep the soil in a physical state to afford the trees' root system a congenial and comfortable home.

**Summary.**

1. Soil fertility is a national problem for the soil is our greatest national asset.

2. The provision of ample humus by one of several means outlined is a pre-requisite of orchard soil fertility in Victoria.

3. The grower should base his manurial practice on the appearance of his trees, and not on the crops they bear.

4. Lack of each fertilizer gives rise to characteristic growth features.

5. Balanced manuring is essential, balance being more important than the actual amounts of fertilizers present. In this respect a good deal of approximation is still unavoidable.

6. Readily soluble types of fertilizer, such as sulphate of ammonia, superphosphate, and sulphate of potash, are preferred to more slowly available forms.

7. Autumn applications for the benefit of greenstuff may be either 1 to 2 cwt. of sulphate of ammonia or superphosphate, depending on conditions which are discussed.

8. Spring applications should, if possible, be made four to five weeks prior to bud burst of deciduous trees; and for medium-sized trees should consist of 3-5 lbs per tree of either 2:2:1 mixture or sulphate of ammonia.

9. For citrus, 3-5 lbs of sulphate of ammonia in spring, and again in autumn, is good practice.

10. Owing to the danger of fertilizers being fixed by the soil before they can be absorbed they should be introduced, if possible, into the actual root zone by deep ploughing, or by irrigation or rain water.

11. At best artificial fertilizers can be only a subsidiary measure to those items of sound soil management, which keep the soil in good physical condition.

**Cement on the Orchard****Channels, Fences, Houses.**

WITH the development of irrigation in orchards, many farmers are still trying to irrigate their blocks through open ditches. Those who wish to get the best results, however, have channelled their holdings with cement-lined pipes or open concrete water carriers, and have increased the efficiency of the irrigation process.

Open dirt drains and ditches are wasteful and the loss of water through seepage and evaporation offsets the economy which such methods are thought to carry. This is particularly true in very dry areas. Mr. G. W. Mawman, whose advertisement appears elsewhere in the "Annual," supplies the following information regarding a channel-making machine which he claims should be used on all orchards.

The "Homebuilder" channelling machines can be supplied for producing in standard 2 ft. lengths, channels with either 3 in., 4 in., 6 in. or 9 in. width gutters, and with either plain or dove-tailed ends.

The materials used to produce channels with the "Homebuilder" machine are sand, gravel or screenings, and cement in proportions of three parts sand, two parts gravel, and one part cement, where gravel or screenings are not available a mixture of four or five to one sand and cement is to be recommended.

The channels can be reinforced if required, and each 2 ft. length of channelling is made at a cost of only three-pence for cement.

The machine, besides making 2 ft. lengths of channelling, is quickly and simply adapted to make half and short pieces and right-angle or elbow pieces.

**Fence Posts, Too!**

Concrete fence posts can be made from a mixture of gravel, rubble, sand and cement. The "Lightning" fence post machine turns out a reinforced post 6 ft. x 6 in. with holes for wire or slots for barbed wire. It can also be obtained in special sizes.

**For Houses and Sheds.**

Cement block making is simplified by the use of the "Lightning Home Builder," also a product of Mr. Mawman, Black Rock. With this compact little machine anyone can make cement blocks for houses, sheds, garages, fruit-packing sheds or any permanent, weather-proof buildings.

Readers are invited to communicate direct with Mr. Geo. W. Mawman, Cheltenham-road, Black Rock, or telephone XW 1751 for further information and advice.

**A Nation Wide Seed Service**

The Distributors of Yates' Reliable Seeds in your town carry stocks of our high quality Packet Seeds in the more popular and better known varieties, and in addition will order and obtain quickly for you any other sorts required. Also, they will be pleased to have your favours for Yates' Vegetable and Flower Seeds in quantities by weight other than our standard packets, machine cleaned farm and grass seeds, nursery goods, such as roses, fruit trees, etc., bulbs and other Yates' lines—all of which are Quality First; or if preferred, orders can be sent direct to our Sussex Street Warehouse. Write for Yates' Current Price List and other publications.

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# Production and Export ... of ... Canned Fruit Increases



Exports to Canada and  
New Zealand Show  
Increase.

**1937** BROKE ALL RECORDS in the production and sale of Australian canned fruits, both local and export, and proved that they compare more than favorably with their nearest competitor, California, on the markets of Great Britain.

Possibly the most significant portion of the 1937 report of the Commonwealth Canned Fruits Control Board was the increased volume of exports to Canada during the season and, to a lesser but commendable degree, the increase of shipments to New Zealand.

## What Production Involves.

The fruit industry in Australia represents a producing value to the Commonwealth of approximately £7,701,859. To conduct this tremendous industry more than 382,250 acres are under cultivation, and a large number of the 361,435 persons directly employed in primary production can be credited to the fruit industry, whilst great numbers again are employed in the handling, selling and distribution ends.

The main canning varieties namely: Peaches, Pears and Apricots, represent a large portion of the production of all fruits, and the canning of such varieties has developed into an important and highly proficient business, employing thousands of persons.

Bringing the study down to individual States, it will be found that Victoria provides most fruit canned in the Commonwealth and requires thousands of acres to produce the necessary fruits actually canned or otherwise processed within the State.

## Production Figures.

1937 production of Peaches, Pears and Apricots created a new record with 2,328,292 cases, over 100,000 more than the previous record of 1936. Peaches showed an increase of 360,000 and carried the total to the top in spite of a decrease in both Pears and Apricots.

## Export Packs Compared.

The Canned Fruits Control Board came into existence in 1925, and the following record of exports since its first export season shows how this still-growing overseas business has developed during the intervening years. We again quote the three main varieties—Apricots, Peaches and Pears, and the figures represent cases of 2 doz. 30-oz. cans, or equivalent, during the years mentioned, as a comparison, and with the destinations shown:—

	1926.	1931.	1936.	1937.*
United Kingdom	190,423	553,564	941,319	1,442,110
New Zealand	81,260	85,498	60,803	103,511
Canada	8,294	141,459	108,361	99,847
The East	12,153	13,469	19,046	20,377
Miscellaneous	3,533	3,849	4,315	6,216
Total	295,663	797,839	1,133,844	1,672,061

\*Figures to October 31, 1937, only.

## Who Supplies Britain?

With the British market open to the produce of the whole world, it is gratifying to note that Australia supplies so much of Britain's requirements. In canned fruits we rank next to U.S.A. and first of all Empire countries.

The Imperial Economic Committee's report for 1936 shows the following contributions of canned fruits and the percentages, recorded in cases of 2 doz. 30 oz. cans, or equivalent:—

Origin.	Peaches.	Pears.	Apricots.
U.S.A.	1,504,327	1,452,127	488,385
Australia	426,662	343,387	133,725
Canada	28,007	141,912	660
South Africa	172	52,330	66,597
Other Countries	39,702	3,517	8,025
Total imports	1,998,870	1,993,273	697,392

## Percentages of Totals into Britain.

From foreign countries	77.28	73.06	71.19
From Australia	21.32	17.31	19.20
From all other Empire countries	1.40	9.73	9.61

## Australian Consumption.

The people of Australia consume slightly more than 35 per cent. of the canned Apricots, Pears and Peaches produced in the Commonwealth, and the balance is shipped overseas. The actual local consumption since 1931 is recorded as: 1931, 624,115 cases; 1932, 443,998; 1933, 634,374; 1934, 853,928; 1935, 693,054 and 1936, 796,213. Thus it will be seen that 1934 was the peak year on record.

## Pineapples.

Although Australia's chief canned fruit production is represented by Apricots, Pears and Peaches, the Pineapple canning industry is quietly developing, and a greater proportion of the total pack of this fruit, than in the case of the other fruits mentioned, is consumed in Australia. The export overseas then, is somewhat restricted to the comparatively small surplus over home consumption requirements. It is a policy of the Canned Fruits Control Board also to keep open already cultivated overseas markets for canned Pineapples, even at the expense of seeming to stint the local market. Meantime, increased plantings are being made, particularly in Queensland.

With the strong competition from Malaya, the only overseas markets at present available to Australia are Great Britain, Canada and, to a lesser extent, New Zealand.

## Export.

As showing the volume and export destination of canned Pineapple exports, it is noted that whereas in 1926 only 13,591 cases were exported overseas, the following table shows the shipments from the peak year, 1934, onwards:

	U.K.	N.Z.	Canada.	Misc.	Total
1934	59,974	715	45,291	370	106,350
1935	39,540	861	18,948	412	59,761
1936	8,837	2,338	12,383	370	23,928
1937 to 31/10/37)	16,543	1,670	14,722	414	33,348



Pure and Wholesome

**A - J - C**

Our Products Include:

**JAMS**

All Varieties

**TOMATO PRODUCTS**

Preserved Tomatoes

Tomato Sauce

**CANNED FRUITS**

All Varieties

*Specialties:*

Tomato, Asparagus,

Vegetable, Celery

**SOUPS**

Canned Asparagus

Canned Spaghetti

**Jams . . .**

**Preserves**

**Sauces . .**

**Cannot Be Excelled**

**Only One Quality**

**—THE BEST**

WE ARE EXPORTERS OF JAMS, CANNED FRUITS & TOMATO SAUCE  
TO ALL PARTS OF THE WORLD.

**Australasian Jam Co. Pty. Ltd.**

**1 Garden Street, South Yarra, Vic.**



A BUSY  
SCENE IN AN  
AUSTRALIAN  
CANNERY.

The decline in late years is explained in the Board's 11th annual report as being attributable, not to lack of trade opportunities abroad, but by the understocked condition of the Australian domestic market. It is probable that the fruit exported could have been readily sold in Australia at remunerative prices, but the policy of the Board is to keep open already-gained overseas markets.

#### Production.

1936 created a record in the production of canned Pineapples with 257,142 cases. In three-year periods up to 1935, with 1936 for comparison, the total production shows as follows, again in cases of 2 doz. 30 oz. tins or equivalent:—

1926, 132,425 cases; 1929, 138,788; 1932, 182,877; 1935, 195,008; 1936, 257,142; 1937 (Summer pack only), 131,724.

#### Research Work.

Again the Oriental Peach Moth Committee has strongly combated the damage done by the Peach moth, and an intensive campaign was conducted during the year. The heavy financial liability incurred was shared by the Board and the Commonwealth Bank. The activities of the Committee included the erection of an insectary at Mooroopna, Victoria, conveniently situated for the study, breeding and release of parasites.

In co-operation with the Council for Scientific and Industrial Research, Mr. G. A. Helson, Entomologist, proceeded to U.S.A. to study control methods in that country. He returned to Australia in October last and brought with him a shipment of parasites which are being used to advantage.

#### The Control Board.

The Canned Fruits Control Board is composed of the following gentlemen:—

Sir Charles Merrett, C.B.E., V.D., chairman and representative of the Commonwealth Government.

Mr. G. J. Evatt, representing State-Controlled Canneries.

Mr. A. W. Fairley, representing Co-operative Canneries.

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## SCIENCE AND CANNING

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In the old days a plenteous harvest meant an abominable glut, when no one was satisfied. To-day large quantities of fresh graded fruit are absorbed by the factories, thus relieving the fluctuating market, and providing an expanding outlet. Washing, picking, peeling and selection for color and quality are skilfully done, the cans are carefully filled and cleverly closed by machinery, and the whole package thoroughly sterilised in boiling water.

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Most of Australia's canned fruit goes to the United Kingdom, where more canned fruit was consumed in 1937 than ever before. Including home production and imported supplies, the total quantity of canned and bottled fruits, preserved in syrup, available for consumption last year was approximately 205,000 tons, equivalent to about 10 lbs. per head of the population. In 1930 the aggregate supplies amounted to only about 130,000 tons, or less than 6½ lbs. per head.

This growth in imports has been accompanied by greatly increased supplies from Empire sources, and during the past three years the Empire's contribution has averaged nearly 73,000 tons a year, representing about 40 per cent. of the total, as against less than 19,000 tons, little more than 25 per cent., in 1919-23. Imports from Empire countries in 1936 totalled just over 71,000 tons, the same quantity as in the previous year. Supplies from Malaya and South Africa both reached new high levels, but there was some reduction in the shipments from Australia and Canada. Pineapples, Peaches and Pears are the chief canned fruits imported, and in 1937 these accounted for 70 per cent. of the total supplies.



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H. M. Leggo & Co. Ltd., Victoria-crescent, Abbotsford.  
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bourne.  
MacRobertson Pty. Ltd., Argyle-street, Fitzroy.  
Mildura Co-operative Fruit Co. Ltd., Mildura.  
Passila Passion Fruit Products Ltd., 40 Queen-street, Mel-  
bourne.

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Display of Canned Fruit at the  
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Advertising has fulfilled an important  
part in increasing consumption in  
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**BECAUSE** It has stabilised the apple and pear industry—enabled markets to be regulated—increased the marketing period—assisted in developing interstate markets. Cool stores have also become a necessary adjunct to canneries and have proved particularly valuable for pre-cooling pears and peaches before canning, and for controlling the ripening process.



The illustration herewith shows a typical 6,000 case fruit store which provides oil store, cooling tower and condenser house, engine room, case dump and grading room.

\* \* \*

The cool store and buildings on an orchard are a permanent asset and increase the value of the property. Stores with capacity from 5,000 to 10,000 cases can be built and equipped to an approximate all-round figure of 5/6 to 6/6 per case. Designs and estimate of cost and methods of financing will be submitted on request.

Increased production and limitation of export markets necessitate further developments of local and Interstate markets. Cool stores can also assist in these developments, and many individual orchardists are finding that a cool store on their property is a valuable asset. Some of the reasons are set out below:—

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# COOL STORAGE —

## Important Investigation with Peaches

### Comparisons with Gas Storage - - Advice on Temperatures

#### Peaches for Export.

SINCE THE LAST "Fruit World Annual" was produced, much research has been done in the matter of cool storage of fruit; not only in cool stores on land, but also in the storage of fruit during transit overseas, experiments have been carefully studied, and, in most cases, valuable data has been compiled.

Messrs. F. E. Huelin, B.Sc.; G. B. Tindale, B.Ag. Sc., and S. A. Trout, M. Sc., have co-operated in a special study of Peaches under cool storage conditions. The following resumé of their findings is taken from the "Journal of Agriculture."

Experimental work on the cool storage of Peaches in air and artificial atmospheres was initiated at the Government Cool Stores, Melbourne, by the Victorian Department of Agriculture. In 1932, the advisory Committee on Fruit Storage Investigations, comprising representatives of the Commonwealth Council for Scientific and Industrial Research and the Victorian Department of Agriculture, was formed. The experiments have since been carried out under the direction of this Committee. All work has been conducted at the Government Cool Stores, except for a preliminary experiment on "gas" storage, which was carried out in the Biochemistry Department of the University of Melbourne, and the following is a progress report of these investigations.

If Peaches could be stored successfully for several weeks, it would be possible to extend the local season and find further markets for the industry by export. The average time of shipment from Melbourne to England is about six weeks, and to allow for delays, a somewhat longer storage life (about eight weeks) would be required. If high quality Peaches from Doncaster could be placed on the London market in a first-class condition, they should realize good prices, particularly after the bulk of the South African peaches had been marketed.

#### Experimental Procedure.

Preliminary experiments showed that peaches could be handled satisfactorily only if picked while still firm and stored promptly at a low temperature. In 1935, peaches were picked at three stages of maturity. The least mature Peaches were still quite green with very little blush. The others, though still firm, were definitely more coloured. The original green was fading, but there was a definite blush. In the most mature peaches, the amount of blush was considerable. It was possible to pick all three maturities on the same day, as the peaches on a tree do not mature uniformly, the outer and more exposed fruit being generally more advanced. The least mature peaches failed to ripen normally after picking, becoming juicy after a few days at 65 deg. F., but remaining sour and flavourless. Hence, in subsequent years the two later maturities only were picked.

The Peaches were stored at 32 deg. F. and 34 deg. F. At these temperatures the fruit failed to ripen, and samples were removed at weekly intervals to 65 deg. F., at

which temperature they ripened in about five days. The storage life is the period within which the Peaches can be removed to 65 deg. F., and still ripen normally, i.e., become juicy and develop their characteristic flavour. If stored for a longer period, the peaches fail to ripen normally on removal to 65 deg. F., but soften to a mealy, dry, and flavourless condition. If considerably overstored, the flesh becomes red in the neighbourhood of the stone. Finally, reddening develops throughout the flesh, and the skin separates from the flesh on the slightest pressure.

As the storage life of most varieties of peaches in air at 32 deg. F. and 34 deg. F. is comparatively short (about five weeks), attempts were made to prolong it by the "gas" storage method of Kidd and West. After fruits are picked, they continue to absorb oxygen and liberate carbon dioxide. In a closed container filled with fruit, it is therefore possible to maintain a definite percentage of carbon dioxide together with a reduced concentration of oxygen. In its simplest form, the method involves restricting the ventilation so as to allow the carbon dioxide to accumulate to a definite level. As most fruits produce carbon dioxide and absorb oxygen in approximately equal amounts, the oxygen is reduced below its concentration in ordinary air (21 per cent.) to about the same extent as the carbon dioxide is increased. Hence atmosphere with 5 per cent. and 10 per cent. of carbon dioxide would contain 16 per cent. and 11 per cent. of oxygen respectively.

#### Maximum Cool Storage Life in Air.

The storage results for several varieties of Peaches are given in Table 1, together with the colour and firmness at picking and maximum eating quality when ripe. In most cases two maturities were picked, and the variation due to maturity is indicated in the Table.

The more mature Peaches had generally a higher colour, a lower pressure, better eating quality on ripening, and a slightly shorter storage life. The results for each variety show remarkable variability from year to year. For successful export to England, a cool storage life of about eight weeks is necessary. This was obtained in the case of four varieties in 1935, but the storage life has been much shorter in other years.

It would appear that a storage life sufficient for export cannot be obtained consistently by the use of refrigeration alone.

#### Optimum Maturity for Storage.

The more coloured peaches invariably ripen to a better quality, but the fruit cannot be picked too mature without serious reduction in the storage life. Consideration of the results in Table 1 suggests that if these varieties are to ripen satisfactorily, they should not be picked until the original green has faded to a slightly yellowish green (stage 2½), and a noticeable blush has developed. They might be picked a little more mature with consequent gain in quality, but it is essential that there should be no signs of softening. It would probably be best to avoid picking fruit less than 15-lb. pressure for storage purposes.



TABLE 1.—The Colour and Pressure of Peaches from Doncaster at Picking in Relation to Quality and the Storage Life at 32 deg. F. and 34 deg. F.

Variety.	Date of Picking.	Condition at Picking.			Storage Life in Weeks at—			
		Ground Colour.	Extent of Blush.	Pressure.	when Ripe. Quality	32 deg. F.	34 deg. F.	
								*
Wiggin . . . . .	10.1.35	..	..	..	fair	4 to 5	..	
Wiggin . . . . .	15.1.37	2 to 2½	20 to 30	13 to 14	very poor	4 to 5	3	
Pump . . . . .	12.1.34	..	..	..	fair	4½	..	
Pump . . . . .	10.1.35	..	..	..	fair	7 to 8	..	
Zerbe . . . . .	10.1.35	..	..	..	fair	7 to 8	..	
Zerbe . . . . .	13.1.36	4	60	17 to 18	fair to good	6 to 7	5 to 6	
Zerbe . . . . .	15.1.37	3 to 3½	30 to 40	10 to 14	poor to fair	4 to 5	3	
Smith's . . . . .	2.2.33	..	..	..	fair	..	3	
Smith's . . . . .	5.2.34	..	..	..	fair	4	..	
Smith's . . . . .	26.1.35	2½	30 to 60	19 to 20	fair to good	7 to 8	3	
Smith's . . . . .	21.1.36	2½	30 to 60	19 to 20	fair to good	5 to 6	4 to 5	
Millicent . . . . .	5.2.36	2½	75	16 to 17	fair to good	6 to 7	5 to 6	
Catherine Anne . . . . .	10.2.37	3	85	17 to 18	good	7	5	
Late Crawford . . . . .	11.2.35	..	..	..	fair to good	10 to 11	5	
Late Crawford . . . . .	7.2.36	3 to 4	60 to 90	15 to 17	fair to good	8 to 9	6 to 7	
Late Crawford . . . . .	15.2.37	4	70	17 to 18	fair	6	4	

\*Ground Colour: 1—Deep Green; 2—Green with trace of Yellow; 3 & 4—Green-Yellow.

#### Gas Storage.

"Gas" storage by the method of controlled ventilation has consistently increased the storage life at low temperatures beyond that obtained by refrigeration alone. "Gas" stored peaches have also taken two to three days longer than the air stored controls to ripen at 65 deg. F. after removal from low temperatures. Results for the maxi-

mum storage life in air and "gas" storage at 32 deg. F. and 34 deg. F. have been obtained over several years, and are given in Table 2. The best results have always been obtained at the lower temperature (32 deg. F.).

The results show that the maximum storage life was obtained in an atmosphere containing 8 to 10 per cent. of carbon dioxide in gas-tight holds, such as are used for

TABLE 2.—Storage of Peaches from Doncaster in Air and in Artificial Atmospheres Containing Carbon Dioxide (CO<sub>2</sub>). Maximum Storage Life at 32 deg. F. and 34 deg. F.

Variety.	Date of Picking.	Temperature, deg. F.	Storage Life in Weeks in—						
			Air.	4% CO <sub>2</sub> .	5% CO <sub>2</sub> .	8% CO <sub>2</sub> .	10% CO <sub>2</sub> .	12% CO <sub>2</sub> .	15% CO <sub>2</sub> .
Wiggin	15.1.37	32	5	..	12	13	13	..	..
Zerbe	13.1.36	32	7	8½	..	8½	..	8½	..
	13.1.36	34	6	6	..	8	..	8	..
	15.1.37	32	5	..	12	13	13	..	..
Smith's	2.2.33	34	3	..	8	..	8	..	..
	26.1.35	34	3	..	4½	..	6	..	4
	21.1.36	32	6	8½	..	9½	..	6	..
	21.1.36	34	5	6½	..	6½	..	5½	..
Millicent	5.2.36	32	7	7½	..	9	..	9	..
	5.2.36	34	6	7	..	8	..	8	..
Catherine Anne	10.2.37	32	7	..	13	13	14	..	..
Late Crawford	11.2.35	34	5	..	7½	..	7½	..	4
	7.2.36	32	9	11	..	13	..	12	..
	7.2.36	34	7	8	..	9½	..	9½	..
	15.2.37	32	6	..	10½	10½	11½	..	..



A modern two-storey 12,000-case Cool Store on the orchard of Mr. V. Lawford, Springfield Road, Blackburn, Vic.

chilled beef, and the carbon dioxide maintained at 8 to 10 per cent. by adding the gas to the atmosphere from cylinders and ventilating if its concentration tended to rise above 10 per cent. The fruit would, of course, need to be promptly cooled in refrigerated stores immediately after picking, and should be at a temperature of not more than 35 deg. F. (approx.) at the time of loading into the ship.

As the best results have been obtained by reduced ventilation with carbon dioxide concentration of 8 to 10 per cent., the storage life in this atmosphere is given in Table 3, together with the corresponding storage life in air.

TABLE 3.—Storage Life of Peaches at 32 deg. F. and 34 deg. F. in Air and in the Optimum Concentration of Carbon Dioxide (8 to 10 per cent. CO<sub>2</sub>).

Variety	Date of Picking	Storage Life in Weeks at—			
		32 deg. F.		34 deg. F.	
		Air.	8 to 10% CO <sub>2</sub>	Air.	8 to 10% CO <sub>2</sub>
Zerbe . . . . .	13.1.36	7	8½	6	8
Zerbe . . . . .	15.1.37	5	13	..	..
Wiggin . . . . .	15.1.37	5	13	..	..
Smith's . . . . .	2.2.33	..	..	3	8
Smith's . . . . .	26.1.35	..	..	3	6
Smith's . . . . .	21.1.36	6	9	5	6½
Millicent . . . . .	5.2.36	7	9	6	8
Catherine Anne . . . . .	10.2.37	7	13	..	..
Crawford . . . . .	11.2.35	..	..	5	7½
Crawford . . . . .	7.2.36	9	13	7	9½
Crawford . . . . .	15.2.37	6	11	..	..

The results for gas storage show as much variation as those for air storage, but it is apparent that in gas storage at 32 deg. F. the storage life has been consistently greater than eight weeks, which is necessary for export. The temperature must be kept constant at 32 deg. F., as at 34 deg. F. the storage life has sometimes been appreciably less.

#### Experimental Shipment.

By way of a demonstration, a small experimental shipment of Late Crawford Peaches was made in 1937. These Peaches were picked at Doncaster, immediately pre-cooled, packed in trays, and promptly shipped at a temperature of 30 to 32 deg. F.

The Peaches arrived in good condition, ripened satisfactorily, and realized approximately fivepence each wholesale.

These results offer definite promise for the storage and possible export of Peaches, but further work is necessary along the following lines:

1. Better control of brown rot by measures in the orchard, such as spraying and orchard sanitation.

2. The use of antiseptic materials in wraps, &c., for the control of brown rot.

3. Gas storage of several varieties on a larger scale, under optimum conditions.

4. Determination of the treatment necessary to ripen each variety in England.

#### Summary.

1. For successful storage, Peaches should be picked when showing a considerable amount of blush, but still quite firm, and stored promptly at 32 deg. F.

2. The average storage life of Peaches stored in air at 32 deg. F. was about six weeks, which is insufficient for satisfactory export to England.

3. By storing the Peaches at 32 deg. F. in a "gas mixture" containing about 8 to 10 per cent. of CO<sub>2</sub> the storage life can be increased by about 50 per cent. With this method of storage, the storage life should be sufficiently long to permit of safe export.

4. Peaches will not ripen at low temperatures, and hence require ripening at elevated temperatures after storage.

5. The storage of Peaches is rendered difficult on account of the frequent development of brown rot on this fruit during storage, but more particularly during ripening.

## Australian and New Zealand Cool Stores with Case Capacities

### VICTORIA.

#### Capacity in Cases.

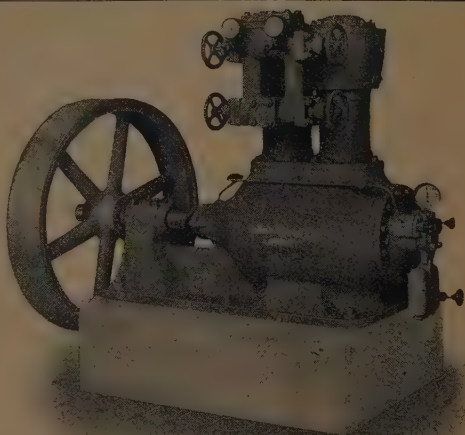
Govt. Cool Stores, Victoria Dock . . . . .	190,000
Shepparton Cannery Cool Stores . . . . .	140,000
Orchardists' Co-op., Doncaster East . . . . .	134,000
Harcourt . . . . .	80,000
Shepparton Fruitgrowers . . . . .	60,000
Blackburn . . . . .	55,700
Ringwood . . . . .	50,223
Ardmona . . . . .	50,000
Australasian Jam Co. . . . .	50,000
West Doncaster . . . . .	40,000
Burwood East . . . . .	42,000
Wentworth . . . . .	39,200
Tyabb . . . . .	38,270
Hastings Cool Stores . . . . .	34,000
Kyabram Preserving Co. . . . .	33,000
Hurstbridge . . . . .	32,000
East Doncaster . . . . .	31,500
Mount Waverley . . . . .	30,420
Sennitt & Son Pty. Ltd. . . . .	30,000
Red Hill . . . . .	29,000



## AUSTRALIAN AND NEW ZEALAND COOL STORES (Continued).

Somerville Cool Stores .....	22,000	Australian Ice Works, Ballarat .....	8,000
Valley View Orchards, Pakenham Upper ..	24,000	Jenkins, Scoresby .....	7,000
Croydon Cool Stores .....	21,056	Scott, D., Greensborough .....	7,000
Angliss & Co. Pty. Ltd., W. ....	20,000	Tynong (W. C. Thomas & Co.) .....	7,000
Templestowe Cool Stores .....	20,000	Carpenter, J. D., Hastings .....	6,500
Box Hill Ice and Cold Storage Pty. Ltd. ...	20,000	Burke Bros., Diamond Creek .....	6,500
Pyke, F. C. ....	20,000	Bunyip .....	6,118
Diamond Creek .....	17,800	Lechte Bros, Mt. Waverley .....	6,000
J. Brunning & Sons, Somerville .....	17,500	Robinson, T., Scoresby .....	6,000
Lawford, E., Doncaster .....	17,000	Heinz Bros., Ballarat .....	5,000
Graceburn Valley, Healesville .....	17,000	Finger, F., Balwyn .....	5,000
Maryborough .....	16,000	Haysey, R. E., Narre Warren N. ....	5,000
Pakenham .....	15,000	Corbett, D. J., Doncaster .....	5,000
Portland .....	15,000	Muller, O., Queenstown .....	5,000
Narre Warren .....	15,000	Jenkins, W. R., Doncaster .....	5,000
Two Bays Nurseries & Orchard Pty. Ltd. ...	15,000	Bailey, J. W., Narre Warren .....	3,800
Essendon Ice Works .....	14,000	Shearer, O. J., Nutfield .....	3,000
Ireland, A. E., Doncaster .....	14,000	Mordialloc Ice Works .....	3,000
Tully, J. J., Doncaster .....	13,000	Moore, J. E., Panton Hill .....	2,500
Lawford, V. ....	12,500	Clark, T. J., Diamond Creek .....	2,500
Apted, Geo., Arthur's Creek .....	11,000	French, Deepdene .....	2,500
Johns, R., Queenstown .....	11,000	Cobram (P. Rossiter, Citrus Fruit) ....	2,500
Richmond Ice Works .....	11,000	Cool Stores, J. Hanley .....	2,000
Dobson Bros., Ferntree Gully .....	10,000	Smith, W. J., Panton Hill .....	2,000
Bendigo Fruitgrowers' Co-op. Association ..	10,000	Kent, Narre Warren .....	2,000
Geelong .....	10,000		
Fitzroy Ice Works .....	10,000		
Heatherlea, Croydon .....	10,000		
Elinora Orchards .....	10,000		
Petty, Herb. ....	10,000		
Petty, F., Tecoma .....	10,000		
Ireland, W., Mitcham .....	10,000		
Brunswick .....	8,000		
		Total .....	1,782,087

\*Despite the fire which occurred some time ago at the Victoria Dock Cool Stores, it is not generally known that space for 190,000 cases is available for use.



## BUDGE Refrigeration Equipment For Fruit Cool Stores.

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**Est. 1890**

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Thos. J. Bromley, Engineer  
Hurtle Square, Adelaide.

Western Australia:  
H. A. Cartwright, Engineer, 19  
Coogee Street, Mount Hawthorn.

## New South Wales.

Barrett, W. E. ....	150,000
Rogers' Meat Company, Orange .....	100,000
Batlow Packing House .....	65,000
Dark's Cold Stores Ltd., Newcastle .....	65,000
Municipal Cold Storage Works, Sydney .....	55,000
N.S.W. Fresh Food and Ice Co. Ltd., Sydney .....	35,000
Orange Fruitgrowers' Cool Stores Ltd., Orange .....	35,000
Leeton Cannery, Leeton .....	35,000
Sydney Cold Stores Ltd., Sydney .....	35,000
Market Cool Stores, Sydney .....	25,000
Griffith Producers Co-op. Co. Ltd., Griffith .....	17,000
Co-op. Cool Stores, Kentucky .....	16,000
Young Cool Stores Rural Co-op. Society Ltd. ....	15,000
Arnot, A. J., Batlow .....	11,000
Hyland & Sons Pty. Ltd., David, Sydney .....	10,000
Werrima Orchard Cool Stores, Wingello .....	8,000
Wallace & Co., Wagga .....	5,000
North Albury Co-op. Butter Factory .....	5,000
Jackes, R. A., Armidale .....	4,000
Ward, S. E., Kentucky .....	3,100
Della Valle, F. J., Batlow .....	3,000
Oldfield & Sons, W. E., Queanbeyan .....	2,500
Freame, H., Kentucky .....	2,100
Westbury, F. J., Kentucky .....	2,000
Yenda Producers' Co-op. Society Ltd. ....	800
Mort, D. R., Leeton .....	500
Total .....	695,000

## Western Australia.

(Case Capacity Not Available.)

Westralian Farmers' Ltd. .... Fremantle, Albany & Bridgetown	
Illawarra Orchard Co. .... Karragullen	
Mt. Barker Cold Storage Co. .... Mount Barker	
Western Ice Company .... Perth and Fremantle	
Perth Ice Works .... Perth	
Bantock's Ltd. .... Subiaco	
Baker Bros. .... East Fremantle	
W. A. Meat Export Co. .... Robb's Jetty	
Macfarlane & Co. .... Perth	

## South Australia.

Metropolitan & Export Abattoirs Board, Port Adelaide .....	100,000
Producers' Cold Stores Ltd., Adelaide .....	100,000
S.A. Cold Stores, Hilton .....	60,000
Govt. Produce Dept., Adelaide .....	30,000
Sturt Producers' Society Ltd. ....	18,000
Balhannah Cold Stores Ltd. ....	17,000
Cudlee Creek Co-op. Society Ltd. ....	16,000
Gumeracha Fruitgrowers' Co-op. Sety. Ltd. ....	16,000
Heysen, O., & Son, Adelaide .....	12,000
Lenswood Cold Stores Ltd. ....	12,000
Mattiske, J. W., Angaston .....	7,000
Redden & Sons, W. J., Verdun .....	6,000
Kelsey, R., Balhannah .....	3,000
Norsworthy, P. G., Williamstown .....	3,000
Redden & Sons, W. J., Cudlee Creek .....	3,000

Total ..... 403,000

## Tasmania.

H. Jones & Co., Hobart .....	300,000
Port Huon Fruitgrowers' Association .....	120,000
Huonville Cool Stores .....	60,000
Huon Deep Water Cool Stores .....	50,000
Beauty Point Cool Stores .....	48,000
Cygnnet Cool Stores .....	40,000
Moonah Cool Stores, Hobart .....	36,000
Bender & Co., Launceston .....	30,000
Lilydale Cool Stores .....	20,000
W. H. Calvert, Judbury .....	12,000
Rostrevor Estate, Triabunna .....	12,000
Walpole, Devonport .....	10,000

Total ..... 738,000

## New Zealand.

Storage Capacity,  
Bushel Cases.

Auckland Farmers' Freezing Co., Auckland	184,000
Harbor Board Cool Stores, Wellington .....	128,000
Co-op. Dairy Freezing Co. Ltd., Wellington	100,000
Motueka Cool Stores Co., Motueka .....	40,000
Nelson Freezing Works, Stoke, Nelson .....	40,000
Turners & Growers, Auckland .....	40,000
Frozen Products Ltd. ....	35,000
Papanui Cool Stores Ltd., Papanui, Christ- church .....	35,000
H. G. Slater Ltd., Hastings .....	35,000
Westfield Freezing Company, Auckland .....	35,000
Masson & Masson, Te Kauwhata .....	27,000
Ashcroft & Edwards Ltd., Hastings .....	26,000
F. Sisson, Papanui, Christchurch .....	26,000
J. Wattie Canneries, Hastings .....	26,000
Wardell Bros., Christchurch .....	25,000
Elite Cool Storage Co., Hastings .....	22,500
Canterbury Orchardists' Co-op. Ltd., Christ- church .....	20,000
Southdown .....	16,000
Gisborne Sheepfarmers' Freezing Works, Gisborne .....	12,500
Radley & Co., Auckland .....	10,000
W. Sisson, Hastings .....	10,000
A. Frost, Hastings .....	9,000
W. A. Tate, Greytown .....	9,000
Christchurch Fruit & Produce Co., Christ- church .....	8,000
J. H. Milne, Hastings .....	7,000
H. G. Apsey & Co. Ltd., Hastings .....	6,000
Radley & Co., Christchurch .....	6,000
Maitland Cool Stores, Nelson .....	6,000
Crystal Ice Co., Dunedin .....	5,000
E. J. R. Milne, Hastings .....	5,000
N.Z. Farmers' Co-op. Assn., Christchurch .....	3,500
E. French, Hastings .....	3,000
W. K. McMiken, Hamilton, Hastings .....	2,500
G. C. McMurtry, Brightwater, Nelson .....	2,500
E. Sisson, Papanui, Christchurch .....	2,000

Total ..... 967,500



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## Britain's Imperial Gateway

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### PERISHABLE TRAFFIC.

Careful handling, speedy transit, first delivery in the market, is, of course, what perishables require. But before all that the question of cold storage often arises, especially for things like meat and fruit, eggs and fish. This is how it is solved at Southampton Docks.

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Right by the quayside are the premises of the International Cold Storage & Ice Company Ltd., up to date, approved by Lloyd's, one vast building with a total capacity of 1,700,000 cu. ft. And because it is so near the quays, the transfer of produce from the ship to the store is carried out astonishingly quickly, and the time of exposure to the atmosphere is scarcely worth talking about. In fact, goods are under refrigeration practically the whole time from moment of removal from ship's hold until despatch in special railway vans or lorries for the different markets.

### SPECIALISED ACCOMMODATION.

Inside, the store has five floors and is divided into sixty-one chambers, so that a great variety of perishables can be accommodated each at its own particular temperature, and under the most suitable conditions. In fact you can have any temperature between zero and 45 degrees Fahrenheit. After a room has been cleared, "Ozone" plant is used to deodorise it, and make it sweet and clean for the next arrivals.

A complete list of what can be found in the store at almost any time would be interminable, but the chief items are fruit, meat, butter, fish, game, poultry, eggs and hops; in fact, anything could be kept there fresh for almost any length of time. Sometimes the produce has not been cleared by the Customs when it enters the store and so there are special bonded rooms for this. As examples of the space available and what can be done, the following is interesting:—

Fruit, 640,000 cu. ft. of storage space has been specially allocated for the reception of fruit. Each chamber has an independent system of refrigeration by cool air circulation, together with means for control of humidity and ventilation. In this way it is possible for every class of fruit to be stored under ideal conditions, and for a large range of temperatures to be maintained.

PEARS: Can be unloaded at the Cold Storage wharf, and sorted up to mark actually in the Cold Store and loaded into refrigerated trucks. From the time the fruit leaves the ship's cold chamber, until it is being sorted to mark in the cold store, is less than five

minutes. The condition of the fruit is therefore kept practically in a refrigerated state until it is actually delivered at Covent Garden, Spitalfields, or whichever Market in London to which the fruit is consigned.

Think of the time saved where vessels call first at a Continental Port—then on to Hull—then London—approximately five days later than those ships would discharge at Southampton.

### DESPATCH FROM THE STORE.

Both the road and rail services of the Southern Railway are at your service at the International Cold Store. Delivery to craft can be made with ease.

The advantage of despatching produce by train is that there is a loading platform right inside the store, long enough to take half a full-length freight train. One shunt, and the whole train is complete. And of course special refrigerated railway vans are always provided so that goods arrive at the market just as fresh as when they left their country of origin.

### WHY SOUTHAMPTON?

Southampton has not become one of the principal centres for the importation of perishable produce into Britain without reason. In fact, more than thirteen million packages of fruit alone and tremendous quantities of meat and dairy produce arriving each year at these modern docks thoroughly test the arrangements made, and find them perfectly satisfactory.

And it is the often tried efficiency of Southampton which enables it to advance its claims against those of other British ports for the handling of perishable produce. But there are other reasons. The largest liners can enter the docks at any state of the tide so that there is never any irritating wait before a vessel can be berthed. Also Southampton is the first berthing port by liners approaching England from the south whence the great majority of perishable produce comes. This means that the Metropolitan markets and the industrial Midlands are reached through Southampton considerably quicker than by other routes. The advantages of being first in the market are obvious. Freight trains take only three hours to reach London and service to the Midlands is equally good. In addition, the fact that the population in the South of England is rapidly increasing and now sixteen million people live within a radius of 100 miles of Southampton Docks means that there is a constant and ever ready market at the very doors of the Port for perishable produce which is after all essential to the well-being of this great population.

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# Fruit Export

## Review of 1937 Apple and Pear Shipments

Competition With Other Countries — Price Trends — Crops and Quality — Stowage Experiments — No Demand for Large Dessert Apples — Trade Treaties — Outlook for the Future.

(Report by Messrs. F. W. Moore & Co. Ltd., London.)

**N**OTWITHSTANDING that it surrounded and included the festival period associated with the Coronation of Their Majesties King George the Sixth and Queen Elizabeth, the 1937 Australasian Apple and Pear Season in Great Britain proved to be one of mixed fortunes for the fruitgrowers and others intimately interested in it. Much was hoped for from the knowledge that London would be thronged with visitors, and the additional employment and distribution of money which the Coronation festivities would create.

But if there was one feature which stood out prominently and far above all others during the 1937 Australasian Fruit Season it was the disapproval, the almost complete disapproval, of the belief so widely held, more especially some months beforehand, that the entire fruit trade would be stimulated, and the demand for Apples and Pears substantially augmented to the material if not measurable benefit of fruitgrowers, shippers, importers and others in consequence of the Coronation.

Wednesday, May 12, was the date of the historic event at Westminster Abbey, and the following Monday, May 17, was Whit Monday bank holiday. So far from the trade being stimulated, the actual experience unfortunately was a period of partial to almost complete stagnation in the fruit markets for the week embracing those dates.

It is always difficult and usually impossible to determine the precise effect of holidays or other events upon a trade like that of the marketing, selling and distribution of fresh fruit. Even so it can be said, we think, that any benefit the sale of Australasian Apples and Pears derived from the Coronation influx of visitors, if it occurred at all, took place in the weeks preceding the ceremony. The truth is probably to be found in an opinion expressed to us by an experienced Covent Garden fruit salesman, who said that he had found nearly always that a day lost in the fruit trade is never regained, and extra sales prior to the holiday do not anything like equalise the regular sales that are lost because of the break.

### First Deliveries.

The arrival of the Blue Star Line motor vessel "Melbourne Star" at London on March 17, with a small cargo of 4,500 boxes South Australian Pears and 900 cases Queensland Apples signalled the commencement of the Australian season. The first delivery from New Zealand was that of approximately 10,500 cases of Apples by the

S.S. "Fordsdale," which vessel reached London on March 27. Interspersed between the above mentioned cargoes was the first of the season from Victoria—approximately 6,000 packages of Pears by the P. & O. Company's popular carrier "Mooltan" at London on March 19; from Western Australia the Aberdeen and Commonwealth Liner "Moreton Bay" followed with a small delivery of Pears, and the first of the Victorian Apples arrived at London by the Orient mail vessel "Oronsay" on March 25. Tasmania's initial deliveries of the season arrived at London on April 2 by the Blue Star Line motor vessel "Australia Star" and the P. & O. Liner "Moldavia."

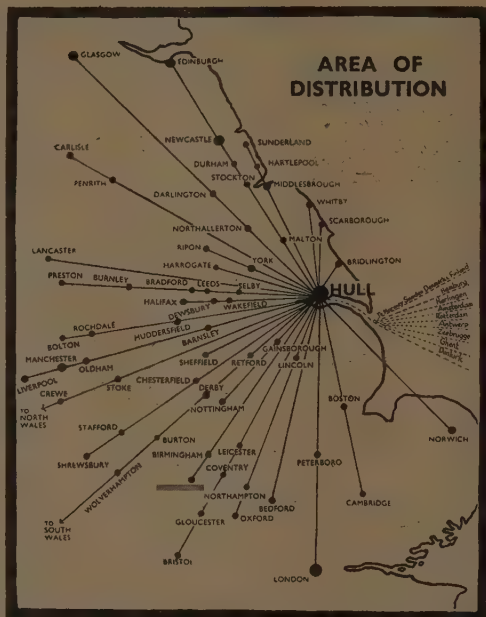
### Trend of Prices.

At times there was some unsteadiness observable in the market demand, but generally speaking it is true to say, that throughout the earlier deliveries and right up until the break occasioned by the Coronation-cum-Whitsun holidays, prices on the whole were quite satisfactory for Apples from all Australasian sources. The demand for Pears was not always up to expectations even in the pre-Coronation period, but Pear prices also suffered a severe setback at the same time as Apples slumped so badly.

Upon the resumption of trade after the Whit Monday holiday, a lack of interest was markedly observable in all salerooms. Although there was no real accumulation anywhere, the fruit was selling anything but readily, and soon there was a drop in values of about 2/- per case all round. Prices continued to fall and at the end of May, Jonathans and certain other varieties from Victoria, Tasmania, South Australia and New Zealand were selling as low as 5/- per case. There had been some heavy arrivals of Jonathans, and contrary to the experience in the early part of the season, when Worcester Pearmain and other colored Apples were in strong demand, they hardly seemed to be wanted at all. There were some very weak deliveries from Victoria; and a couple of large cargoes from Tasmania were of the "out of season" class, owing to the carrying vessels arriving many days later than the dates shippers had been informed they were due at their U.K. destinations.

Moreover, the fruit in question was in very advanced condition, with some waste showing. This undoubtedly was very costly to the growers, shippers and importers interested in these particular cargoes, and what was worse





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Sales on Commission by Private Treaty only. We do not purchase. Over sixty years' of Fruit Distribution.

Our Sale Rooms are the largest and most up-to-date in England; consignments are therefore displayed to the best advantage, consequently, our returns are the best.

We have specialised in the Sale of Australian Apples and Pears by expert salesmen for many years past, and we have the largest and best customers in Great Britain amongst our clients.

Bigger and better business is our objective.

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Southern Tasmanian Representative .....	W. H. Ikin & Son, Dunn Street, Hobart.
Northern Tasmanian Representative .....	Bell & Gerrard, No. 200 Cimitiere St., Launceston.
West Australian Representative .....	The Westralian Farmers Ltd., Perth.

REVIEW OF 1937 EXPORT SEASON (Continued).

market values as a whole including those for sound cargoes were affected adversely. Once down, the Apple market is always slow to recover, and for the first three weeks in June the prices remained on the same unremunerative level—5/- to for the the most part about 7/6 for Apples from all Australasian sources. The New Zealand authorities relieved the pressure somewhat by placing in cold storage a quantity which we would estimate at somewhat in excess of 150,000 cases. It is unfortunate that the vagaries of the market robbed our Dominion friends of the due reward of their effort to assist its recovery, for after firming up strongly at the end of June and holding for a few weeks the Apple market receded unexpectedly, and for no apparent reason, towards the conclusion of the season. The opinion has been offered that it was forced rather too high for Sturmers in July and that this brought about the final reaction we refer to.

A somewhat unique feature of the season was the fact that, after the severe disappointments which were experienced in the second half of May and extended into June, prices for Apples rose from their low level despite the competition from the English Strawberries. Supplies of Strawberries came on to the market in light quantities at the end of May; they were at their highest from June 10 to 28, and continued in lighter volume for about another two weeks into July. The prices realised for Apples during the Strawberry season and the subsequent period made a concise and interesting study, albeit they are probably of little value in any sense as a precedent for future reference, for the unlooked for and quite unusual fall in Apple and Pear values in the second half of May made the whole situation somewhat abnormal. Nevertheless, the prices for Tasmanian Apples in sound condition during the latter periods mentioned show the trend during the time Strawberries were on sale.

Extent of Crops and Quality of Fruit.

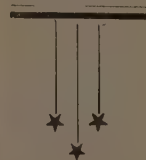
Tasmania and Victoria filled rather more than their respective shares of the Australian quota. The West Australian crop was damaged extensively by hail, the important Bridgetown area being hit very badly. Queens-

land shipments were only very small, those from New South Wales represented less than two-thirds of the quota which that State was entitled to ship, and there was also a small shortage in the case of South Australia. As indicated elsewhere in this review, weather conditions in New Zealand were far from favorable for the fruit-grower; the Apple and Pear crops in the Hawkes Bay district were literally devastated by a phenomenally severe and sustained frost. The result was that New Zealand was unable to supply its proportion of the agreed Australasian quota for the United Kingdom by over 400,000 cases. The shipments from New Zealand totalled roundly 720,000 cases, against the quota of 1,150,000 cases.

Speaking generally, the quality of the fruit from the different sources was regarded as a little variable at times, after making full and due allowance for the fact that the market unfortunately showed a still greater degree of variation, from one period to another. We saw some splendid Cox's Orange Pippins from New Zealand, but on the other hand we thought that the Dominion Jonathans as a whole were not as bright as formerly, although on the average they managed probably to maintain a premium in price over that realised for the same variety from some of the Australian States. We also formed the opinion that some of the other New Zealand varieties which occupy an important place in their ratio to the total volume of shipments—Sturmers, Delicious and Dunns—were not up to the former qualitative standard of Apples of the same varieties from that source. As is usual, in more seasons than not, there were some very attractive Apples from Western Australia; while if there was a fault with the South Australian fruit it was that some of the red dessert varieties were just a little lacking in color. The Victorian Apples were prejudiced by the fact that all too many of the Jonathans were delivered in full ripe to overripe condition, or else the fruit was showing signs of wilting and shrivelled skin. On the whole the Tasmanian fruit made a good impression. In the early shipments there was not as much bitter pit noticeable as has often been the case. Ribstons were of pleasingly improved



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Export  
Pears  
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Shepparton,  
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**Sole Suppliers of "Black Swan" Brand  
Apples, Pears, Grapes, Oranges**

REVIEW OF 1937 EXPORT SEASON (Continued).

quality and condition, although we are bound to say that some of the larger sizes of this variety could, with decided advantage, have been held back from export to these markets. There is always a demand in England for 2½ and 2½ inch Ribstons, if they are in sound condition. Some of the deliveries of Jonathans and mid-season varieties from Tasmania suffered owing to the prolonged voyages of a couple of vessels which brought large cargoes; Cleopatras were "patchy," some of very dull, rather lifeless appearance and an occasional line most disappointing; but taken by and large the quality of the Tasmanian Apples evoked favorable comment. A well-known private treaty selling house in Long Acre, Covent Garden, issued a circular to the trade, in the course of which the statement was made that "The Tasmanian fruit has again been very good; and buyers now realise that apples from Tasmania can, given careful packing and grading, compete successfully with Apples from any other country." We are of the belief, from our own experience and from what was said to us by other members of the trade, that many will agree with the opinion expressed in the above-quoted statement. It was gratifying to find again that the Tasmanian Granny Smiths are earning an increasingly good reputation on these markets, and we saw many really excellent lines of Tasmanian Sturmer Pippins—the variety that is by far the most important contributor to the Apple exports of the Island State.

Compared with season 1936, the shipments from New Zealand to U.K. showed a reduction of roundly 240,000 cases Apples. From Australia there was a decrease of about 340,000 cases Apples. Some comment was caused right at the conclusion of the season when importers still had stocks of Australian and Tasmanian Apples to clear and the New Zealand authorities were engaged in marketing their cold-stored stocks, by the arrival in London of the S.S. "Donau" with a quantity of Tasmanian Apples which had been advised from Tasmania as having been consigned to Holland. The New Zealand authorities protested, claiming that the Tasmanian Apples thus unexpectedly delivered here by the "Donau" had a depressing effect on the market at a time when they and their distributors were making endeavors to steady prices.

**Weight of Tasmanian Apples.**

A satisfactory feature of the past season was the fact that the fruit trade in general commented favorably upon the increase in the net weight of Apples in the cases from Tasmania. Although the various types of Tasmanian cases were included in this general commendation, it was perhaps in fruit packed in the American style cases made of whitewood, with the bulge that is automatically associated with the term "American Style," that the added weight attracted most notice. We had several lots of fruit of various varieties weighed on arrival, and whilst the figures we give should not be taken as indicative of the weights of all Apples of these varieties shipped from Tasmania, they do serve to substantiate the statements made to us regarding the extra weight by that section of the trade particularly connected with the handling of Tasmanian Apples.

We found that a mark of Sturmers in American type pine cases, upon which we concentrated over more than one vessel, showed gross landed weights, varying according to the size of the Apples and the ratio of shrinkage during voyage, from 48 lbs. to 56 lbs. The greater proportion went 50 lbs. to 53 lbs. gross in the case of this particular brand. Similarly, some Granny Smiths from

Northern Tasmania weighed from 48 lbs. gross for 100s to 52 lbs. gross for 234s, and this line generally was from 50 lbs. to 52 lbs. gross. An importer who handled one of the best known brands of Tasmanian French Crabs, bulge packed in American pine standard boxes, found upon weighing one consignment that the gross weight throughout was principally 62 lbs. per case. A few cases went as high as 66 lbs. gross! Taking the lower and more representative figures of 62 lbs., and allowing for the weight of timber and packing, these French Crabs gave the very satisfactory net weight of 53 to 54 lbs. throughout the consignment in question.

**Pears.**

There appeared to be every reason for anticipating the results of the Australian and New Zealand Pear shipments with confidence. For some while prior to the commencement of the Australasian deliveries the English markets were barer of Pears than had been the case during the same period in any recent year. First of all, the maritime strike on the Pacific Coast of North America shortened supplies from U.S.A. Then the imports into the United Kingdom of Pears from the Union of South Africa showed a substantial reduction, in that this year they totalled 473,970 packages (including 310,235 standard boxes) compared with 610,219 packages in 1936. It was known too that a disastrous frost in the Hawkes Bay district of New Zealand—normally the principal area in that Dominion for the production of Pears for export—had wrought havoc upon the crop. The dire effect of the frost visitation is strikingly demonstrated in the export figures—seven thousand packages this year, whereas in recent years the quantity has ranged usually from 175,000 to over 250,000 packages.

There also was the belief that deliveries from the State of Victoria were likely to be less than those of 1936. This was not borne out, for finally the quantity shipped from Victoria represented an increase, and constituted a fresh record for that State, i.e., 477,000 packages to U.K. in 1937 compared with roundly 410,000 packages in 1936 which stood as a record to that time. However, the increased deliveries from Victoria did not enter into the question at the stage to which we are referring, nor would they necessarily have done so at all had their condition been better and sounder upon delivery by the overseas vessels. As stated, at the commencement of the Australasian season the prospects for Pears looked bright. This was the universal opinion throughout the trade in England, and forward buyers were operating very enterprisingly in consequence. As we have indicated, the condition upon delivery of some of the Victorian Pears left much to be desired. This unfortunately applied to quite a considerable proportion.

At a critical stage, too, in May a large consignment of Tasmanian Pears showed signs of imperfect carriage. The Pears ex this steamer which loaded in Tasmania at a very suitable time in March, were all more or less in forward condition, many were overripe, some almost worthless, and all demanding promptest disposal. The same applied although in a lesser degree to a couple of subsequent deliveries from the Island State. It is evident that the question of the carriage of Pears has still to be mastered by some of the steamship companies whose vessels are engaged in the carriage of this valuable fruit to these markets. There was also a lack of interest following the immediate Coronation period on the part of buyers, although no doubt it was contributed to by the condition





Loading Canning Peaches at a Goulburn Valley Orchard, Vic.

# Producers' Co-operative Distributing Society Ltd.

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**Municipal Fruit Markets - Sydney and Melbourne**

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## REVIEW OF 1937 EXPORT SEASON (Continued).

of some of the shipments. Some very nice "packs" were received, but our impression was that in the matter of the quality and appearance of the fruit itself, neither the Victorian nor the Tasmanian Pears were equal to those of twelve months ago. In the salerooms the buyers showed a tendency to disparage and relatively ignore certain varieties.

Altogether, after making due allowance for the effect of the unfavorable influences mentioned, it would appear that the position has to be faced that this year the Australasian supplies of Pears reached, or at any rate dangerously approached, saturation point on the London market. Some of the principal U.K. outports at times could have taken supplies to advantage perhaps, but viewed from the standpoint of the deliveries as a whole it seems evident that the 810,000 boxes Australasia sent to Great Britain this year were all that, if not more than the trade required or could readily absorb. Viewing the future, we think that attention should be paid to the feature that, owing to the Hawkes Bay crop losses, the imports of Pears from New Zealand this year were only 42,000 packages, including the direct and indirect shipments of about 7,000 for the Continent. Omitting last season's small crop, and taking the five years 1932 to 1936, we find that the average production of export Pears in New Zealand is 116,455 boxes. Therefore, it would appear that next year, a delivery of about 130,000 packages can be looked for from that Dominion.

Whilst we might hesitate to assert that under favorable conditions the Australian and New Zealand total of just over 800,000 packages this year necessarily represents saturation point in respect of the consumptive capacity of the U.K. markets, we will say that if New Zealand had been able to send a normal quantity this year, instead of only about a 35 per cent. delivery, that very situation of glut and complexity would almost certainly have been experienced with about 900,000 boxes on the markets here during the brief Australasian season. In considering the weight of Pears on the English markets there is to be kept in mind the fact that in any year quite a fair proportion of the imports of this fruit from South Africa, and a still larger percentage of the Argentine Pears, are dealt with in the salerooms concurrently with the disposal of Pears from the Australian States and New Zealand.

We would advise that the entire situation in relation to Pears for export to Great Britain should be examined now by Australian and also New Zealand interests, with the object of keeping what is a valuable trade in a healthy condition in the matter of varieties, packing and other associated features. There is also much room for the Steamship companies to render valuable assistance in the all-important question of efficient carriage and good delivery.

#### Shipboard Stowage Experiments and Carriage.

As we have indicated elsewhere, there were two or three "bad blots" in the Tasmanian programme which, unfortunately, were very costly to the owners of the fruit. The delivered condition of quite a percentage also of the Victorian export fell short of what is required on the part of the overseas vessels to assist in the maintenance of a receptive market. Nevertheless, it can be said that the programme of shipments this year constituted a marked advance upon the 1936 schedule, when representations were made in London to shipowners emphasising the extraordinary length of voyage of some of the vessels.



Interior view of a portion of the Spitalfield Fruit Market, England.

The average length of voyage throughout the 1937 programme of steamers from Tasmania, particularly—in which State, because of the volume of its fruit exports, the providing of the shipping tonnage and the arranging of the loading programme always presents the greatest problem to shipowners and shippers alike—showed a gratifying improvement over the voyage averages of the previous two or three years. Our Marine Surveyors, Messrs. H. H. Bridger & Co., reporting to us following the arrival of the last of the 1937 cargoes summed up their impressions in these words:—

"There were a few vessels this season which were not very satisfactory, but... taken generally we consider the carriage and condition of the fruit this season has been reasonably good, and trust that in final disposal you have found the same."

Experiments have been made in several recent seasons by some of the steamship companies, including a couple of lines whose vessels customarily bring to the markets of the United Kingdom the largest cargoes of any. First of all, what is known as the Tower System was employed on some of the vessels whereby the use of wooden laths and battens, known by the term "dunnage," was very largely dispensed with and instead the cargo was stowed in blocks, with fairly large air shafts in certain positions in the tiers or stacks of cases. This system met with reasonable success. This year, following upon earlier experiments on a small scale in vessels of the same line, the new motorships "Port Jackson" and "Port Wyndham" made the departure of loading substantial quantities of Apples in lower holds under "no dunnage" conditions. By eliminating dunnage it was realised that there would be a saving in stowage space, enabling the ship's holds or compartments to accommodate an additional number of cases.

The Cambridge and Ditton (East Malling) scientists as a result of their experiments had arrived at the opinion that under the "shower" air circulation system, dunnage could be eliminated and the fruit still be carried and delivered in good condition. Two lower holds in the "Port



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REVIEW OF 1937 EXPORT SEASON (Continued).

Jackson" were stowed under this new method in Tasmania, fruit in two other compartments in the vessel being stowed with the customary dunnage. It was very pleasing to find that the fruit in the "experimental" holds of the "Port Jackson" was in splendid condition and quite equal in that respect to other fruit which the vessel carried under the usual dunnaged stowage. The condition of the "no dunnage" fruit delivered by the "Port Wyndham" was not equal to that of the "Port Jackson," but neither was the entire outturn for that matter. Incidentally, the "Port Jackson" made the faster voyage from Tasmania to London.

The conclusion to be drawn from the experiment was that at present it should be confined to fast vessels with suitable air circulation. Dr. A. J. Smith, of the Low Temperature Research Station at Cambridge, already well known in Australia for the valuable investigational work he performed on earlier visits, went out there in connection with this year's experiment and journeyed home on the "Port Jackson." Dr. J. R. Vickery and officers of the Australian Council of Scientific and Industrial Research collaborated with Dr. Smith in Australia.

**Competitive Fruit from Other Sources.**

On other occasions we have referred fully to the increasing competition experienced from South African Apples and Pears, and also those from the Argentine, a non-Empire source. South Africa was not able this year to ship to Great Britain quantities equal to those received twelve months ago. In the natural order of things, it is to be expected that in 1938 their deliveries will be larger, as probably also will those from South America. We have dealt adequately with the same subject in our two immediately preceding annual Reviews; so on this occasion suffice it to say that, with their advantages in shorter voyage and lower production and transport costs, the competition from these countries—whose deliveries on to the markets of the United Kingdom coincide always to a certain extent with those from Australasia—should be kept in view by our Australian and New Zealand friends, because it is competition which undoubtedly will increase further. Any lowering of the British Customs Tariff would be quickly reflected in larger imports from Argentine, whence—although this year's sendings of Pears to Great Britain were only about the same in total to those of 1936—the exports of all classes of fruit to Continental and other destinations again showed a large proportionate increase over the previous year. Compared with 191,742 standard boxes in 1936 the exports of Pears from the Argentine to the United Kingdom this year totalled 190,912 boxes. The shipments to Continental ports were 201,141 boxes. Imports of Argentine Apples into U.K. totalled 37,339 cases against 17,791 cases last year.

Dealing with supplies from other countries, we received an offer of Apples from Switzerland at a date before the sale of our own consignments was finalized. A very big improvement in quality and presentation was observable in the Lisbon Apples, whereas at one time Apples from Portugal had all the appearance of pigfeed. During July, when our Apples were still being marketed, there were supplies here of Portuguese new season's Apples making from 6/3 to 9/- per box. Later, just before the Australasian deliveries were cleared, some Gravensteins of excellent quality reached London from the Italian Tyrol. They made a very good impression, possessing nice flavor, clean, shapely and even in appearance, and free from bitter pit. The first of the Californian Gravensteins arrived

on August 11 at Southampton—a little later than usual. Bartlett Pears from California were on sale in London during the week commencing July 19, just when the last of the Victorians and Tasmanians were being offered at Covent Garden and Spitalfields.

Again, the demand for late varieties of Apples from Australia, Tasmania and New Zealand towards the end of July was affected somewhat owing to a large quantity of Italian and Hungarian Peaches arriving on the market, and besides Home-grown and other supplies there were also Plums from one of the Balkan States on offer at the same time. The English market is abundantly catered for by very many countries in these days, when sterling funds are so much sought after!

**Freight Rates.**

We understand that, subject to the fulfilment by shippers of their space bookings and associated conditions, a new rate of freight on Apples from Australia, effective for three years commencing 1938, has been arranged, viz.:—

3/6 per case, less rebates—totalling 5d. per case—all in Australian currency, plus Bank Exchange Australia on London at the ruling rate less an allowance of 7½ points.

The presence in London during the new freight negotiations of Mr. J. B. Mills, President of the Australian Apple and Pear Export Council, and Mr. Everard Ross (H. Jones & Co. Pty. Ltd., Hobart, Tasmania) was of considerable advantage in the making of representations to shipowners regarding the increased rebate. For those interested in the production, handling and importing of Australian Apples we think it can be said that the net rate compares both fairly and favorably with the freight rates on fruit from North-West America, which are 82½ cents per box on Apples, and 92½ cents on Pears, for a much shorter voyage.

**Future Outlook.**

In our Review twelve months ago, when there did appear to be reasonable grounds for entertaining at any rate a feeling of controlled optimism, we referred to the folly of attempting prophecies, and after the past season's disappointments we naturally are more than ever convinced of the risks which would attend the making of forecasts concerning prospects for Apples and Pears, or in fact for any kind of fruit in this country, which nowadays is so amply and abundantly supplied with fresh fruit from so very many parts of the world. Official figures show that the total value of the imports of fresh fruit into the United Kingdom, from Empire and foreign sources, of recent years has averaged £25,000,000 per annum.

From departmental sources in North America comes the news that the 1937 Apple crop, from which supplies are now reaching this country, is estimated to be over 70 per cent. larger than the crop of twelve months ago, which was a small one. This year's Apple crop in the United States is estimated to be in excess of two hundred million (200,000,000) bushels, it will be one-fourth larger than the five years' average, 1931-35, and will rank next to the large crop of 1926, when 230,000,000 bushels were produced in U.S.A. Undoubtedly this will mean increasing competition on the English markets.

Then there are grounds for uneasiness in the statement reported to have been made by the British Foreign Secretary, Mr. Anthony Eden, before the League of Nations Assembly at Geneva last month, intimating or suggesting that the British Government was ready to



## REVIEW OF 1937 EXPORT SEASON (Continued).

enter into an agreement on the most-favored-nation basis with the United States for the reduction of Customs duties. In this same connection too, we see an ominous significance in a press announcement made by the South African Secretary for Agriculture upon his return to Capetown last July, following the Imperial Conference which he attended in London with General Hertzog, the Union's Prime Minister.

Discussing the suggested trade agreement between the United Kingdom and the United States, the South African official statement was that "there might be some products on which a reduction of existing preferences (in England) would have to be considered, but even if this were to happen the advantages to be gained by opening up international trade... would outweigh any small sacrifices which might have to be made" by producers. We believe that in the event of a trade treaty being arranged between Great Britain and U.S.A., the British Customs duty on fresh fruit would come up for consideration, despite the fact that the necessity for increasing the rate of 4/6 per cwt., in consequence of the big variation in the sterling value of the dollar as compared with the value ruling in July, 1932, when the rate of duty was fixed, has been consistently represented to the authorities for some time past—in particular at the Empire Fruit Producers' Conference held in London in June, 1936, at which delegates were present representative of the English and overseas Empire fruit-growing industries. More recently the same subject has been regularly before the newly formed Empire Fruits Council, on which the Australian Apple and Pear Council and the New Zealand Fruit Export Board are represented, and of course it has also been engaging the attention of the Australian and New Zealand Government authorities.

As we have pointed out previously, the competition from South American fruit growing countries needs also to be kept prominently in view. For these and other reasons, therefore, it is not possible to regard the future outlook with anything approaching unqualified optimism. This year's English Apple crop is a light one. The quantity of Bramleys is considerably less than one-half of last year's. Consequently, Australian and New Zealand cooking Apples next season will not meet with the intensive competition that they experienced this year from the very large quantities of gas-stored English Apples.

Despite the largely increased and ever-increasing competition from Apples from many countries as well as the home-grown supplies—for the English producer is rightly taking a larger share of his own market—the markets of Britain are far from lost to the Australasian Apple and Pear industry. It will be essential, though, for our overseas growers to be prepared forthwith to send only the varieties, types and sizes of fruit the British market demands.

In this connection we should be failing in our duty were we not to point out with full emphasis that nowadays there

is little or no demand for large dessert Apples. In Glasgow, which market at one time appeared to prefer the 2½ inch dessert Apples and would accept 3 inch fruit also, the trade is showing the same tendency as that which has become universal throughout the English metropolitan and provincial fruit selling centres. The popular call alike in London, Liverpool, Hull and elsewhere in England is for the 2½ and 2½ inch sizes, or their equivalent counts, in all dessert varieties. Of the culinary class of Apples, the trade really wants only 2½ and 2 inch sizes; and prefers the shipping of 2½ inch cooking Apples to be kept to as small quantities as possible. We know, of course, that these are not easy matters for the grower. Much definite good, however, will be done by the shipments being shaped accordingly. The selling of unwanted sizes, equally with that of unwanted varieties, whether of the dessert or cooking class, has a lowering effect upon values throughout.

## Distribution by Ports (from Australia).

Port.	Apples.	Pears.
London .....	2,310,087	616,494
Liverpool .....	723,893	68,195
Hull .....	455,912	37,579
Glasgow .....	233,663	12,780
Southampton .....	69,893	34,702
Manchester .....	32,536	—
Avonmouth .....	9,348	—
Newcastle .....	4,397	—
Hamburg .....	212,387	3,913
Rotterdam .....	81,070	—
Stockholm .....	78,966	5,973
Antwerp .....	57,089	—
Dunkirk .....	29,870	—
Hook of Holland .....	19,865	—
Other Ports .....	26,182	2,466
Total, 1937 .....	4,345,158	782,108
Total, 1936 .....	4,703,641	640,753

## Arrivals and Ports (from New Zealand).

Port.	Apples.	Pears.
London .....	566,220	41,165
Liverpool .....	60,150	—
Manchester .....	27,739	—
Glasgow .....	28,809	—
Southampton .....	36,973	366
Avonmouth .....	4,624	—
Hook of Holland .....	24,628	633
Dunkirk .....	26,354	—
Total, 1937 .....	770,497	42,164
Total, 1936 .....	1,022,979	110,135

## Summary of Arrivals in 1937 (from Australia).

	Tas.		W.A.		Vic.		N.S.W.		S.A.		Qld.		Total.	
	Apples.	Pears.	Apples.	Pears.	Apples.	Pears.	Apples.	Pears.	Apples.	Pears.	Apples.	Pears.	Apples.	Pears.
U.K. . . . .	2,446,855	206,481	432,877	22,770	646,403	476,870	77,736	13,649	222,206	50,040	13,652	3,839,729	769,750	
Continent . . . . .	239,582	2,266	182,408	7,442	54,768	2,650	4,505	—	24,166	—	—	505,429	12,358	
Total . . . . .	2,686,437	208,747	615,285	30,212	701,171	479,460	82,241	13,649	246,372	50,040	13,652	4,345,158	782,108	

## Shipping Fruit to Southampton

### Excellent Facilities Available

SHIPPERS of perishable produce from Australia to England during the last twelve months, have used the Port of Southampton as a port of discharge, to a very much greater extent than ever before. To lots of us, we immediately ask—"Why Southampton?"—and to those who have not had an opportunity of visiting this port, the explanation can be summed up in a very few words.

Firstly, Southampton is the nearest great port in England to Australia and the Dominions and could be justly termed, to-day, "the Natural Gateway for distribution to the Great London Markets and the Midlands."

Secondly, the facilities for the quick berthing of ships and discharge of cargo, together with the most up-to-date electrical equipment and wonderful storage sheds, place Southampton well at the top of the premier ports throughout the world. Just as an instance—on March 12 last, the Union Castle Mail Steamship Company's "Roslin Castle," one of this company's latest cargo ships, arrived at Southampton with a record cargo of 322,068 cases of South African deciduous fruits, by far the largest ever received in a single vessel at Southampton Docks. The whole of this cargo was discharged from this ship, sorted up to mark and railed to various points throughout England within 2½ days of the arrival of the steamer. One can only realise from this, the wonderful facilities and efficiency of the organisation which can bring this about, and possibly, the explanation is that the docks, the cold store, and the railways, are owned and controlled by Southern Railway, who, as a result of this unity, can give co-operation of service, which is so very necessary, more particularly in the case of the handling of, perishable produce.

Thirdly, Southampton is unique inasmuch that, due to the fact that there are four high tides every day, vessels are able to berth at any time of the day or night.

**Pear Shipments from Australia:** During the last season, a considerable quantity of Pears were shipped to Southampton—some of these for use on the local market, others for rushing up to the London market, where from four to five days were saved as a result of the discharge of these Pears at Southampton. In not one case has it been reported that the Pears discharged at Southampton were in anything else but excellent condition. There certainly was a slight extra cost in reaching the London market by this means, but this cost is infinitesimal in comparison with the advantages received and the knowledge that loss through forward condition, or deterioration through loss of refrigeration on arrival, is practically eliminated.

All these Pears are discharged from the ships' chambers on trays, which come straight from the ship to the wharf and are immediately moved into the cool store or sheds, where sorting to mark takes place and the cases placed in insulated containers and the express trains rushed to London—the time of transit being less than three hours. Upon reaching London, these containers are not unpacked, but lifted from the rail unit and placed on to a motor unit, which takes the fruit immediately to the required market, and not until reaching that market is there any necessity for the cases to be handled. This means that from the time the cases are packed into the container at Southampton, there is no more handling until they are actually being unpacked at Covent Garden, Spitalfields or Borough Market.

There is another advantage which is also of very great value, and that is, that the cold store at Southampton has a capacity of 1,700,000 cubic feet, and when (as is very often the case) a number of ships may be arriving in England with Pears or Apples during the same week (which, in ordinary circumstances would "glut" the market) surplus stocks can be distributed direct to the Midlands and supplies held in the cool store at Southampton, which can be rushed to London at a moment's notice, should the market be in a position to take same. By holding stocks at Southampton and distributing to the various inland towns from that centre, the various London buying interests are also kept in ignorance of the actual quantities of fruit that may be arriving in England, and thus the knowledge of a "glut" is kept from them, which must reflect to the advantage of the shipper as far as prices are concerned.

All these points are definitely worth consideration, for after all, the time saving factor, improved and less handling and control of the supplies for the London market to ensure satisfactory prices, are matters that interest not only the growers and shippers, but Australia as a whole.

The men who try to do something and fail are infinitely better than those who try to do nothing and succeed.

... Two things stand like stone;  
Kindness in another's trouble,  
Courage in your own.

—Adam Lindsay Gordon.

Pat: Oi dislikes new boots.

Salesman: Why is that?

Pat: 'Cause Oi never can git me fate into them till Oi've worn 'em a week or so."

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# Dried Fruit Production Increasing

**Production and Export  
12 Years figures  
compared**

**Firm Trade with Canada  
and New Zealand**

**1929** AND 1930 raised the peak of dried vine fruits production in Australia to well over the 70,000 ton mark, and the forecast of the Australian Dried Fruits Association for 1937 bids fair to approximate this quantity, although 1936 production was down 4,000 tons below that of 1935.

## Area Under Vine Fruits.

The area under production from vine fruits in 1935 was recorded as 117,347 acres, whilst in 1936 it has increased to 118,978 acres, though not all of this area was devoted to fruit for drying only. The area registered for dried vine fruits purposes in 1936 was stated to be 54,680 acres, and a further area of 8,296 acres, which at the time of recording was classified as unproductive, doubtless included a good proportion of vines for drying purposes.

Vines for table use were reported as representing a total, in the Commonwealth, of 7,323 acres and for wine of 48,680 acres.

In addition must be recognised a certain proportion of large fruits, the surplus of which production is used for drying purposes.

The figures of the Commonwealth Bureau of Statistics, recording up to the end of 1936 and released in October, 1937, show that the total yield of Grapes for that year was 364,059 tons, of which 64,044 tons were converted into dried Raisins and Currants.

The contribution of the various States in the form of fresh Grapes later converted into Raisins and Currants is disclosed as:

	Tons.
New South Wales . . . . .	19,435
Victoria . . . . .	158,336
South Australia . . . . .	59,458
West Australia . . . . .	10,655
A total of . . . . .	247,884

## Production and Export.

### Twelve Years' Figures Compared.

According to the 13th annual report of the Commonwealth Dried Fruits Control Board, the following figures show the production and exports of dried vine fruits in the thirteen years since the Board assumed the responsibility of directing the organised marketing of Australian dried fruits. It is interesting, at this stage, to note that this year marks the 50th anniversary of the establishment of this important primary industry in Australia, during which it has grown to commendable proportions, and its production is almost double that recorded when the Board assumed control. The production is expressed in tons and the exports represent the surplus supplies after providing for domestic requirements:

	Produced.	Exported.
1925 . . . . .	37,217	24,528
1926 . . . . .	35,082	23,125
1927 . . . . .	55,201	41,194
1928 . . . . .	31,850	19,187
1929 . . . . .	71,723	57,788
1930 . . . . .	72,194	56,732
1931 . . . . .	50,549	37,966
1932 . . . . .	58,501	43,265
1933 . . . . .	77,832	65,727
1934 . . . . .	69,591	53,722
1935 . . . . .	66,904	49,840
1936 . . . . .	62,942	46,853

## Where Overseas Exports Go.

Great Britain is still Australia's greatest overseas market. Taking the acreage at present, the average production of Sultanas, Lexias and Currants is estimated at approximately 80,000 tons per year and an exportable surplus, over Australia's requirements, of approximately 65,000 tons per annum.

Taking 1936 as an average year, Great Britain's importations from all sources amounted to 124,439 tons, of which Australia supplied 26,043 tons, representing 20.9 per cent. of the total imports. This percentage indicates a steady drop from the peak year 1933, when we supplied 41.4 per cent. of Britain's requirements. The average percentage over the past 12 years has been 25.2 per cent.

Fortunately, exports to both Canada and New Zealand are increasing every year, and in 1936 Canada took a total of all varieties, of 16,130 tons, while New Zealand took a total of 3,994 tons. By far the largest contribution to the shipments was made by Sultanas.

The following table shows the total quantities of dried vine fruits shipped to the respective countries since 1926, in tons.

	Great Britain.	Canada.	New Zealand.	The East.
1926 . . . . .	18,494	776	1,748	—
1927 . . . . .	33,068	3,398	2,257	—
1928 . . . . .	14,912	3,056	1,654	—
1929 . . . . .	47,985	4,660	2,027	—
1930 . . . . .	46,089	7,435	2,164	—
1931 . . . . .	29,207	8,949	2,343	688
1932 . . . . .	24,263	14,583	3,343	648
1933 . . . . .	54,693	8,079	1,742	529
1934 . . . . .	34,856	14,528	3,367	659
1935 . . . . .	30,725	14,720	3,790	777
1936 . . . . .	26,043	16,130	3,994	668

## Average Realisation Prices.

Realisations in London fluctuate according to the competition offering, supplies available and to demand. In the past 12 years these fluctuations have been very diverse. Sultanas have dropped by 80 per cent., Lexias have risen and Currants have remained reasonably static. Taking 5 year periods up to 1935 and adding the average prices





A typical Australian Vineyard and Citrus Grove.

in the past two years, the comparisons are seen. The figures quoted are average prices per ton.

	Sultanas.	Currants.	Lexias.
1925 . . . . .	£68 0 0	£30 15 0	£31 16 8
1930 . . . . .	41 16 5	35 0 9	26 0 0
1935 . . . . .	39 10 0	30 3 6	38 15 0
1936 . . . . .	42 17 8	30 5 3	40 8 10
1937 . . . . .	43 3 10	33 3 2	45 12 8

#### Publicity.

The dried fruits industry has contributed to the cost of advertising Australian dried fruits, both abroad and in Australia, and this persistent advertising has done much to maintain both overseas and local consumption. A fund of approximately £20,000 per annum is expended upon all forms of publicity in Great Britain. The Board contributes £2,500 towards the maintenance of an Australian Trade Commissioner in Canada. In Great Britain, trade exhibits, newspaper advertising, window displays, hoarding advertisements and other forms of advertising are periodically arranged.

The Director of Trade Publicity in Great Britain, Mr. A. E. Hyland, has directed the publicity in that country on behalf of the Board and there can be no doubt that this department has contributed much to the marketing of Australian dried fruits in the United Kingdom.

In Australia, publicity has assumed a large part in educating the public to eat more dried fruits. Demonstrators and lecturers visit all schools periodically and tell the younger generation the value of dried fruits in their food. Window displays, exhibits at shows, and the distribution of recipe books are only a few of the many means of maintaining and increasing the local consumption of dried vine fruits.

#### The Various Boards.

The Commonwealth Dried Fruits Control Board works in co-operation with Boards in four States, the personnel of which is:—

Commonwealth.—Chairman, W. C. F. Thomas, C.B.E.; Secretary, R. A. Marx, 100 Queen-street, Melbourne.

Victoria.—Chairman, W. Parker Moloney; Secretary, W. Cremor, 118 Queen-street, Melbourne.

New South Wales.—Chairman, G. J. Evatt; Secretary, G. A. Try.

South Australia.—Chairman, G. A. W. Pope; Secretary, W. N. Twiss.

Western Australia.—Chairman, J. N. Cox; Secretary, E. H. Rosman.

In addition, the Australian Dried Fruits Association represents growers in all producing States. Chairman, H. D. Howie; Secretary, W. N. Sumner, 450 Collins-street, Melbourne.

#### THE PORT OF HULL.

In Great Britain the port of Hull is the natural gateway to the immense industrial areas of the North and Midlands, and more than 13,000,000 people (almost one-third of the total population) live within the territory most economically served by it.

Fruit from overseas countries is dealt with mainly at the King George Dock, which is one of the most modern in the country, or at Alexandra Dock.

No effort is spared to ensure rapid discharge and despatch by the express trains provided by the London and North-Eastern Railway. These trains are despatched to all parts of the country, giving delivery in the principal towns on the day following despatch.

The port not only holds an eminent place in the trade of Great Britain, but it is the most convenient for the continental trade. Its geographical position and the splendid steamship services make it the ideal centre for the transhipment and re-export of goods to Scandinavian, Baltic and all near continental ports.

Buyers have free access to the docks and quays for the inspection of fruit before and after the sales, which are held regularly each Monday, Wednesday and Thursday, and at other times as required. These sales are largely attended by the principal buyers from the industrial centres of England and Scotland and parts of Ireland.

A large number of the most important firms of fruit brokers and importers are resident in Hull, many of whom specialise in the export trade and are in close touch with Scandinavian, Baltic, and all near continental ports.



Mr. P. H. Thomas.

# Apple and Pear Packing

## Community Organisation

### Lay-out of Plant

#### STANDARD CASE GUIDE

(By P. H. Thomas, Chief Horticulturist, Tasmania.)

**D**URING a recent tour in U.S.A., in which he studied the American methods of fruit packing, Mr. P. H. Thomas, Chief Horticulturist of the Department of Agriculture, Tasmania, was impressed with the system adopted, in some fruit-producing districts, of community packing. The Department issued a descriptive bulletin upon the subject and the following is an abridged reprint of Mr. Thomas' report. The blocks are included by courtesy of the Department. As will be seen, Mr. Thomas sees no reason why a similar system should not be of great benefit to Australian growers in certain districts.

During recent years, when fruit marketing methods have been critically reviewed, reference is often made to the disability which the Apple and Pear industries are experiencing in the numerous packs and brands exported to home and overseas markets.

The Tasmanian average production in a normal season now totals approximately 4,500,000 bushels of Apples and 250,000 bushels of Pears, and it is estimated that this crop is marketed under at least 2,000 brands or marks.

#### Community Packing.

The community packing-house system was first developed in America, and is now firmly established in all important fruit-producing countries. Whilst in certain areas Tasmanian orchards are somewhat scattered, there appears to be no valid reason why, in the principal centres of production, this system could not be adopted. Community or central packing-houses give a number of definite advantages to the producer in the grading, packing, and presentation of fruit. Amongst these the following are of particular importance:—

Standardisation of the pack is more effectively performed with an efficient organisation of trained men handling a large quantity of fruit than a number of small independent units.

Small lots of fruit may be merged into long lines and marketed under one mark or brand.

Up-to-date labor-saving equipment, which the small grower cannot afford, may be obtained for case-making, grading, lidding, and handling.

Supplies may be obtained on a cheaper and more satisfactory basis.

Inspection is facilitated and marketing can proceed on more orderly lines.

In addition, the fruitgrower is freed from the worry attendant to preparing consignments for export to the different markets, and can devote his whole attention to orchard improvement and crop production.

#### Location and Construction.

In selecting the location for a community packing-house, the most important matters for consideration are proximity to a good road, shipping port, or railway siding.

The site chosen should also be served with water and power, and sufficient area obtained to permit extension for cold storage or processing purposes. The capacity of the building is the next consideration, and adequate floor space should be obtained to enable the different operations to be conducted with maximum convenience and efficiency.

In assessing the floor space, careful attention must be given to the receiving and holding requirements. One of the biggest handicaps experienced in many packing-houses is the congestion that often occurs through having insufficient space to stack fruit which is to go over the grader and packed fruit awaiting shipment.

Floor space may be assessed on the average daily output. The general practice is to calculate the area required on this basis; thus, if this is estimated to be 1,000 bushels per day, in order to effectively handle this quantity, approximately 4,000 square feet will be necessary. This should provide storage space for approximately 3,000 bushels of loose, and 2,000 cases of packed, fruit and grading and packing equipment.

There are a number of important matters for consideration in designing and constructing the building. First, the floor site should be arranged so as to give the greatest facilities for receiving the loose, and despatching the packed, fruit.

In some American packing-houses advantage has been taken of a natural ground slope to obtain the full use of the gravity conveyor system in handling the fruit. For Tasmanian buildings it is probable that hardwood timber would be the cheapest form of construction, although brick or concrete might be used if the unit was of sufficiently large capacity.

Most packing-houses to-day are constructed on the sectional plan, with separate rooms for receiving, sorting, and grading, and packing and storage. If the fruit is to remain in the receiving or storage section for any period when extreme temperatures might occur, insulation of these may be necessary.

Although it is cheaper to construct a two-storey building, the disabilities experienced by the extra handling, even with mechanical conveyors, make it desirable, where sufficient ground area is available, to limit operations to a single floor.

Much time and extra handling can be saved by constructing the receiving floor about 6 inches lower than the floor-level of the lorries which will deliver the fruit. This will eliminate a lot of lifting, and also enable a conveyor section to be run out on to the floor of the lorry. Covered platforms for receiving and despatching the fruit are also advantageous and considerably facilitate handling during hot or rainy weather.



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APPLE AND PEAR PACKING (Continued).

The general design of the packing-house should permit the fruit being received at one end of the building and progress by easy stages, with the minimum amount of handling, to the other end, whence it is forwarded to its destination.

Lighting.

This is most important, both from the owners' and the operators' viewpoint, as no greater handicap can be experienced than a dingy, ill-lighted building. One of the most common faults in many packing-houses is the provision of side or wall windows instead of overhead skylights.

A packing-house should be constructed so that the maximum use is made of day-light, a saw-tooth or hipped roof being preferable. This enables full use to be made of the floor space under normal conditions without recourse to artificial lighting, and fruit may be stacked high on the side walls without obscuring the light. For dull days or night work artificial lighting will be necessary. In the main part of the building the ordinary bulb will be suitable, but over the sorting-table special provision is necessary. The sorters' work is very trying to the eyes, and most houses now equip this section of the building with shaded blue glass day-light bulbs. These, besides preventing eye-strain, show up such blemishes as bitter pit and codlin moth stings more prominently.

Floor Organisation.

The general plan of the floor organisation is largely decided by three main factors—

- (1) The average quantity of loose fruit to be stored before going over the grading-machine.
- (2) The daily working capacity and output.
- (3) The average quantity of packed fruit awaiting storage or despatch to the markets.

Grading-machines are generally installed singly or in pairs in the centre of the building, according to the daily output required.

The first operation after receiving the fruit is to stack it in its allotted position in the loose-fruit section of the building. In some packing-houses the floor space is divided into marked-off squares, with the grower's number. The fruit, with efficient organisation, can be transported to its location from the receiving door by means of conveyors.

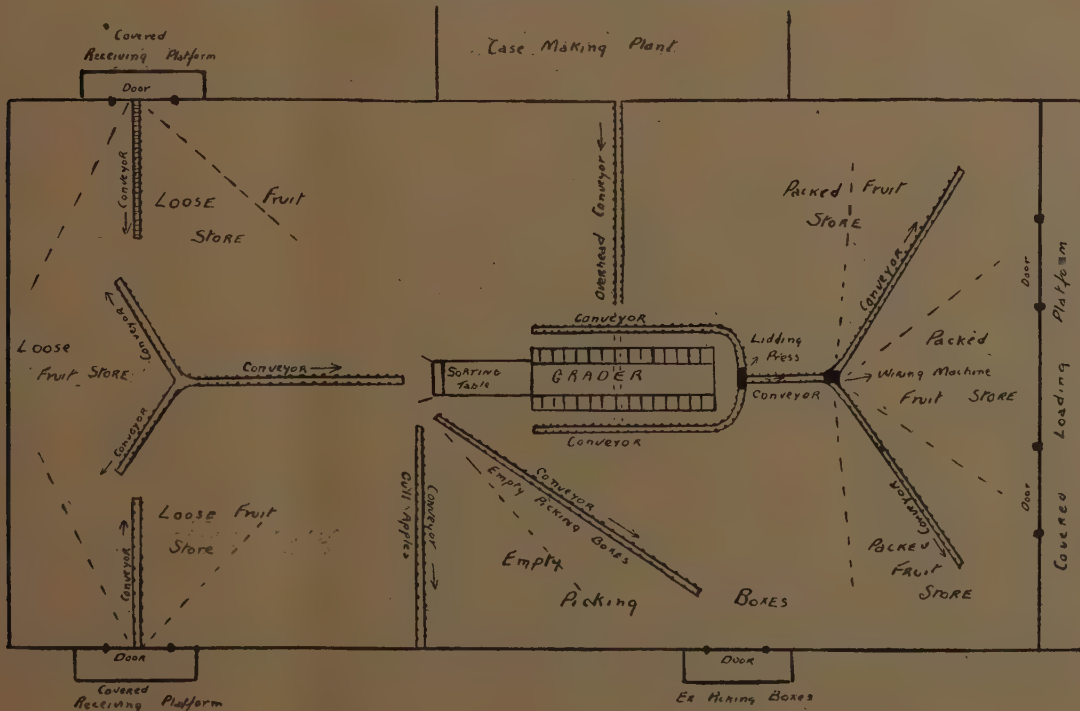
In districts where the spray residue problem makes washing necessary, the next move on the conveyor service is to the washing-machine.

It is at this point, or at the feeding-shoot of the sorting-table, that provision must be made for the disposal of empty orchard cases, and a section of the receiving floor, with an accessible door and platform, is generally allocated for this purpose.

From the washing-machine or feeding-shoot the fruit slowly travels over the sorting-table, where culls are rejected and the fruit separated into the extra fancy, fancy, or choice grade. It then passes over the sizing machinery until it is delivered into the appointed packing-bin.

In commercial packing houses all grading machines are equipped with conveyors running parallel to the grading

Suggested Plan for Floor Organisation of a Community Packing-House.





**APPLE AND PEAR PACKING (Continued).**

machine. After packing is completed the cases are transferred to the conveyor and proceed to the lidding machine, which is installed at the other end of the grader.

After the lid is affixed, the packed case then travels along a short conveyor to the wiring bench. During the journey the cases may be intercepted and labelled without lifting them off the conveyor. From the wiring-bench, conveyor routes radiate in two or three directions, down which the finished cases pass to their allotted stack for shipping or storage.

Where fruit is received in orchard boxes and new cases are used for packing, it is usual to stack the shooks of timber in a separate building adjacent to the main packing-house. Here the cases are assembled and pass on high conveyors to the travelling belt, which runs along the top of the grading machine. Under this system a supply of cases is conveniently available to the packer without congesting the floor space.

**Cull Apples.**

One of the most serious problems of the community packing-house is the handling and disposal of cull Apples. Many packing-houses impose a tolerance limit of from 3 to 5 per cent. of the fruit delivered, and a penalty charge is made where this is exceeded. The general practice when such fruit is separated at the sorting-table is for the rejects to be placed on a separate band-conveyor, from which they are ultimately transported to the basement or out of the factory. Here they are either bagged or dumped in heaps until removed.

The most satisfactory system of operation is to exclude all culls from entering the packing-house, and, if the members will instruct pickers that fruit submitted with over 5 per cent. tolerance will not be accepted, the problem will become much simpler. Where cull sorting is practised, it is necessary that a means of disposal be arranged or the fruit destroyed.

**Removal of Spray Residue.**

The majority of orchardists in Tasmanian have been

fortunate in not having to resort to washing their fruit in order to conform with the health laws.

The recognised world tolerance in vending fruit treated with arsenic sprays is one-hundredth part of a grain of arsenic trioxide per pound of fruit. Fruit washing or brushing is also sometimes necessary to remove harmless spray residue or other markings which detract from its sale appearance.

Under these circumstances it is probable that the type of brushing-machine in use in British Columbia would prove quite efficient in cleaning any fruit necessitating treatment. This is a long rectangular box-like attachment, the interior of which is fitted with a series of revolving brushes, through which the fruit passes on conveyor-rollers. For effective operation, care must be taken not to allow the brushes to become overloaded with deposit, and they should be removed at regular intervals and replaced with clean ones.

**Sorting and Grading.**

In many of the recently-constructed packing-houses, the sorting-table, whilst being in integral part of the grading-machine, is extended so that it becomes a separate operation.

There is no doubt that the sorter occupies one of the most important positions in the packing-house, in selecting the fruit, classing it into the different grades, and rejecting any unfit for packing.

In progressive packing-houses very careful attention is given to this work, the general policy being to prevent any fruit under the grade requirements from reaching the packing-bin. On modern machines each separate fruit is handled and placed on its grade conveyor-belt before it can travel over the sizing machinery.

Sorting-tables are constructed on a number of different systems, but those most favored are the slowly-moving belt or spiral roller on which the fruit passes before the sorters. Effective lighting is essential. For a grader with a working capacity of 1,000 cases per day, at least 10 to 14 sorters are required.




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**REMOVING SPRAY RESIDUE.**


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**APPLE WASHING MACHINE  
IN OPERATION.**


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**APPLE AND PEAR PACKING (Continued).**

The tables are generally arranged so that the moving fruit may be transferred to three belt-conveyors, according to its grade, which will deliver it on to the sizer. These are arranged so that the lowest grade will have the longest distance to travel. Inferior fruit is, of course, rejected at this point and placed on a separate band that delivers it to its destination for bagging or disposal.

**Packing and Wrapping.**

Whilst a number of different types of Apple and Pear containers are at present in use, the general trend is to standardise cases of the following dimensions:—

**Standard Apples Case:**

Internal dimensions, 18in. long x 11½in. wide x 10½in. deep.

**Timber specifications—**

Ends, 11½in. x 10½in. x ½in. thick.  
Sides, 19½in. x 10½in. x 5/16in. thick.  
Tops, 19½in. x 11in. x 3/16in. thick.  
Bottoms, 19½in. x 11in. x 3/16in. thick.  
Cleats, 11½in. x ½in. x ½in.

End pieces are often constructed of two unequal conjoined pieces. Sides may be either single or two equal pieces. Tops are cut ½in. longer than the specified overall measurement to allow for high bulge, and are either of two or three equal pieces. Bottoms are generally made of two equal pieces.

The unitised lid, in which the respective pieces are machine-joined to the cleat, is more conveniently applied to the case in the lidding-press.

**Standard Pear Case:**

Internal dimensions, 18in. long x 11½in. wide x 8½in. deep.

**Timber specifications—**

Ends, 11½in. x 8½in. x ½in. thick.  
Sides, 19½in. x 8½in. x 5/16in. thick (one piece).  
Tops, 19½in. x 5½in. x 3/16in. thick.  
Bottoms, 19½in. x 5½in. x 3/16in. thick.  
Cleats, 11½in. x ½in. x ½in. thick.

The separate pieces for the ends and tops are constructed on the same lines as detailed for the standard Apple case. The general recommendations for packing will be confined to the above cases.

Apples and Pears are now universally packed on the "crown" system. It is difficult to describe a method of packing, and with the present services attached to the Department of Agriculture it is almost unnecessary. The shipper requiring instruction in packing either of these cases can obtain the personal services of a field officer by application, and an hour spent in actual demonstrations should explain the basic principles of the pack.

The crown pack is so named because the fruits are built up in the form of a crown, the highest in each layer being in the centre of the case. When the pack is completed and the lid affixed, the case has an aggregate bulge of from 2in. to 2½in. at the top and bottom. The fundamental principle of this pack is that the case is made to fit the fruits contained therein, the flexible lid and bottom permitting from 3 to 5 lb. of fruit more than the actual cubic capacity to be enclosed. This is to offset any fruit shrinkage due to loss of weight by water transpiration and consequent settlement of the pack, both of which are known to occur under normal and cold storage conditions.

By adopting this method of packing two important selling advantages are gained. First, a minimum weight of 40 lb. of fruit can be guaranteed to the purchaser, and, secondly, if any shrinkage occurs in the contents, the cases arrive full and compact owing to the recession that takes place in the lids and bottoms of the cases.

The crown system of packing is effected by keeping a firm downward pressure on fruits in each layer when placed at the sides and ends of the cases.

The key to a successful pack is the arrangement of the first and second layers. If these are correct, no difficulty should be experienced in obtaining the right height and bulge to the case.

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**SORTING AND GRADING  
APPLES.**

Each fruit is handled and placed on  
its respective grade conveyor.

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APPLE AND PEAR PACKING (Continued).

A useful hint in placing the fruits is to pack the first layer moderately tight, then the second, commencing to put the firm downward pressure on the side and end fruits. When these are completed, the hands are pushed down between the fruits and the end of the case and the whole pack firmly drawn towards the operator.

It will be found that this will result in a slight raising of the central fruits in the layer. The pack is then keyed by slipping the end two or three fruits into the spaces formed at the end of the first, and continuing the pack, keeping pressure on the end of and side fruits, and building up the centre of the layers throughout the pack.

All packs are carried out on the straight system, every fruit having either the calyx or stalk pointing to the end of the case.

In the first layer the paper twists are reversed to improve the appearance if the case is opened on the bottom. It will be found that the finer the fruit is sized the greater the speed and efficiency attained in the packing.

The following are the counts which have been found generally applicable to Tasmanian Apple and Pear varieties. It is preferable to state these instead of the sizes on the labels or ends of the case:—

**Apple-Packing Guide for the Standard Case.****"Crown" System.**

(Internal Measurements, 18in. x 11½in. x 10½in.)

Pack Count.	Pack.	Row.	No. Layers.	Democrat, London Pippin, Geveston, Fanny, Yates, and Other Flat-shaped Varieties.	Cox's Orange Pippin, Scarlet, and Other Round-shaped Varieties.	Jonathan, French Crabs, Crofton, and Other Round-conic Varieties.	Sturmer Pippin, Worcester Pearmain, and Other Conical Varieties.	Cleopatra, Granny Smith, Tasman's Pride, Delicious, and Other Oblong Varieties.
88 .....	2 x 2	6 x 5	4	3½L	..	..	..	..
96 .....	2 x 2	6 x 6	4	3½	..	..	..	..
100 .....	3 x 2	4 x 4	5	3½L	..	..	..	3
113 .....	3 x 2	5 x 4	5	3L	..	3L	3	2½
125 .....	3 x 2	5 x 5	5	3	..	2½	2½	2½L
138 .....	3 x 2	6 x 5	5	2½	..	2½L	2½L	2½
150 .....	3 x 2	6 x 6	5	2½	..	2½	2½	2½
163 .....	3 x 2	7 x 6	5	2½L	2½L	2½L	2½	2½L
175 .....	3 x 2	7 x 7	5	2½	2½	2½	..	..
180 .....	3 x 3	5 x 5	6	..	2½L	2½	2½	2½
188 .....	3 x 2	8 x 7	5	2½L	2½	..	..	..
198 .....	3 x 3	6 x 5	6	2½	2½	2½	2½L	2½
216 .....	3 x 3	6 x 6	6	2½L	2½L	2½	2½	2½L
234 .....	3 x 3	7 x 6	6	2½	2½	2½L	2½L	2½
252 .....	3 x 3	7 x 7	6	..	2½L	2½	2½	..
270 .....	3 x 3	8 x 7	6	..	2½	2½L	..	..
288 .....	3 x 3	8 x 8	6	..	2½L	2½	..	..
306 .....	3 x 3	9 x 8	6	..	2½	..	..	..
324 .....	3 x 3	9 x 9	6	..	2	..	..	..

Range of Average Net Weights Obtained = 43-46 lb. 46-50 lb. 43-46 lb. 44-48 lb. 45-48 lb.

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The 188 pack is only advisable with noticeably flat-shaped varieties of fruits, and the 3 x 3 pack should be adhered to when possible, so that side slackness may be avoided.

"L" means approximately 1/16th of an inch over the size indicated, and, where 2½-inch fruit is concerned, it has been found necessary to detail several alternative packs to make allowances for grading and the variation in shape of varieties from different districts.

Pear-Packing Guide for the Standard Case.  
(Internal Measurements, 18in. x 11½in. x 8½in.)

"Crown" System.

Pack Count.	Pack.	Row.	No. Layers.	Winter Cole and Other Short Varieties.	Beurre Bosc and Other Long-shaped Varieties.
80	3 x 2	4 x 4	4		3L
90	3 x 2	5 x 4	4	3	3
100	3 x 2	5 x 5	4	2½	2½
110	3 x 2	6 x 5	4	2½L	2½
120	3 x 2	6 x 6	4	2½	2½
135	3 x 3	5 x 4	5	2½L	2½
150	3 x 3	5 x 5	5	2½	2½
165	3 x 3	6 x 5	5	2½	2½
180	3 x 3	6 x 6	5	2½L	
195	3 x 3	7 x 6	5	2½L	
210	4 x 3	6 x 5	6	2	

Range of Average Net Weight

Obtained = 46-49 lb. 44-47 lb.

The two varieties chosen may be regarded as the extremes in shape, and, where intermediate or semi-long types are being dealt with, slight modification may be found necessary.

#### Lidding and Wiring.

When packing is completed and before the lids are affixed, it is general for the variety, numerical count, and shipping number to be stamped across the end of the box in the space left above the label.



Packed case with lid compressed into position ready for nailing.

It is essential, when packing the crown pack, that an efficient lidding-press be used for nailing down the cases, as it is impossible to effectively carry out this work unless an even pressure is applied at both ends of the lid.

The average bulge on a properly packed case will be approximately 2½in. in the centre, tapering to ½in. at each end. When the lid is affixed, the bulge will be distributed so that approximately 1½in. will be at the top and ½in. at the bottom.

For small-capacity packing-houses the general type of machine operated by a foot-lever should fill requirements. There are many types of these on the market. The primary considerations are good leverage and sufficient clearance from the press-arms to permit quick and easy nailing. It is also necessary to have adequate space underneath the box to allow for the bottom bulge. For convenience in operation a single-action ratchet release is desirable.

In the latest types of lidding machine, depression of the foot-lever for bringing the lids into position also automatically stamps the box with the variety, number, count, etc. When this is released, the case is turned on its side and delivered on to the conveyor.

All types of lidding-presses should be equipped with a nail-stripper and shelf for the wooden cleats and operator's hammer.

For large-capacity houses a power-operated lidding-press is desirable. With this the whole process of lid pressure and nailing is carried out in the one operation. A single power machine of the latest type, provided with an automatic nail-feed, will cope with an hourly output of approximately 600 cases.

In order to safeguard the package against possible ullage, pilfering, or breakage, it is generally necessary to wire each end of the case. A number of machines have been designed for this purpose in which the straining and tying apparatus performs a very efficient service. In applying the wire it is necessary to affix it as close as possible to the cleats, otherwise slackening may result.

#### Conveyors.

The installation of a conveyor system will considerably reduce operating costs and permit more efficient interior organisation of the packing-house.

It is possible by means of gravity conveyors to almost entirely eliminate the lifting and stacking of cases of fruit from reception until delivery.

Two main types of conveyors are now manufactured—the "roller" and "wheel" types. The latter is lighter in construction and generally less expensive; it is also, by reason of its hollow centre, more adaptable for fruit-case handling, and can be conveniently constructed in straight and angular sections.

The majority of packing-houses in Canada and the United States of America have now installed conveyor systems, by which it is possible to move the fruit from the receiving platform to the loose storage stack, from the stacks to the sorting-table, from the packing-stand to the lidding-press, and from the press to the packed-fruit store.

Where female packers are employed, a floor hand is generally detailed to supervise the grader, attend to the packers' requirements, and lift the packed cases on to the conveyor. In recent types of mobile packing-stands, a device has been installed by which the stand may be turned and the packed case of fruit wheeled over and deposited on the conveyors without lifting.

Where a two-storey building is operated, it is generally necessary to provide an elevator. These are very simply adjusted to the gravity conveyor, and will save a large amount of handling.



# Greetings . . .

From the . . .

**N.S.W. Chamber of Fruit and Vegetable Industries**



**W. MUSGROVE,**  
Senior Vice-President.



**L. J. JENKINS,**  
President.



**P. S. MACDERMOTT,**  
Secretary.

## Goodwill Message

The Editor, "Fruit World Annual."

Dear Sir,

The festive season of Christmas approaching, the members of the N.S.W. Chamber of Fruit & Vegetable Industries desire that Seasonable Greetings be extended to all readers of "Fruit World." It is therefore with a keen sense of appreciation of the fraternal feeling that exists between our members and so many of your readers that together with them, I tender you a message of deepest Goodwill.

I am proud to say, and I believe that your readers will be glad to know, that the Chamber has untiringly continued its efforts to improve matters associated with our important Industry. The personnel of the Chamber's Council and the members in general have been gratified upon receiving many appreciative acknowledgements.

"Service with Integrity" remains our practical working ideal, and this feature has further encouraged all members to hold their producer clients' interest paramount, resulting in many expressions from Growers of their appreciation of services rendered.

Economic conditions have decidedly improved since my last message to you, just twelve months ago, but many problems still confront us, and you may depend upon our Chamber doing its full share towards their solution.

May 1938 prove to be a bountiful year to you in every way, including full health and an ample monetary return to all concerned in the Industry.

Yours faithfully, **L. J. JENKINS, President.**

## Members of the Chamber

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Associated Growers' Selling Agency.  
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W. E. Bromley.  
P. W. Chew & Co.  
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## GUIDE TO THE OPTIMUM PERIODS FOR SHIPPING APPROVED VARIETIES—FOR EXPORT TO EUROPE.

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Cox's Orange Pippin F-EM.	Pearmain . . . E May
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Triumph . . . EM-LM.
Beurre Bosc . . . EM-LM.
Beurre D'Anjou . . . LM.
Doyenne du Comice . . LM.
Beurre Hardy . . . LM.
Beurre Diel . . . LM-EA.
Madam Cole . . . LM-EA.
Winter Cole . . . LM-EA.
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Josephine de Malines . EA.
Giblin's Seedling . . . EA.
Glou Morceau . . . EA.
L'Inconnue . . . EA.
Winter Bartlett . . . EA.
Winter Nelis . . . EA.
Keiffer . . . EA-LA.
Easter Beurre . . . EA-LA.
P. Barry . . . May.
Black Achan . . . May.

## Legend.

"X" indicates large sizes suitable for culinary purposes could be shipped slightly earlier.

"F" indicates February.

"EM" indicates early March.

"LM" indicates late March.

"EA" indicates early April.

"LA" indicates late April.

"E May" indicates early May.

"L May" indicates late May.

## Packing Material.

Paper. — One ream will pack approximately—

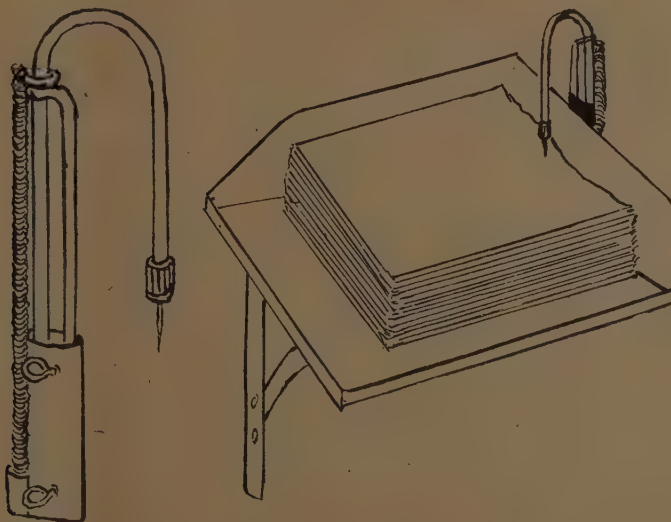
19 cases of 2½ in. Apples.

18 cases of 2½ in. Apples.

16 cases of 2½ in. Apples.

Nails.—1 case (112 lbs.) will make and lid 800 cases.

The periods will vary slightly in different districts, but the sequence detailed should not alter.



Paper-tray with Needle-holder.

*Gerrard Sales  
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GERRARD WIRE TYING MACHINES CO. PTY. LTD.  
Head Office and Works: 18-24 IRELAND STREET, WEST, MELBOURNE

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# CASES

constructed with

# "TITAN" NAILS

give

100% Efficiency

"TITAN" NAILS HAVE HEADS CONCENTRIC WITH THE SHANK AND POINTS THAT ARE CENTRAL. IN CONSEQUENCE, MORE CASES PER DAY CAN BE MADE WITH "TITAN" NAILS.

If more holding power is needed use "TITAN" PROCESSED NAILS which are manufactured according to a Patented Formula. Up to 50% more cases can be made for a small additional cost.

AS AN EXAMPLE OF THE SAVINGS WHICH CAN BE EFFECTED BY USING "TITAN" PROCESSED NAILS, WE GIVE THE FOLLOWING AUTHORITATIVE FIGURES:—

The holding power of  
1½ x 14 Polished Nails . . . . . 42 lbs.

The holding power of  
1½ x 15 "TITAN"  
PROCESSED NAILS . . . . . 48 lbs.

1 Cwt. of 1½ x 14 Polished Nails makes  
1,578 Cases.

1 Cwt. of 1½ x 15 "TITAN" PROCESSED  
NAILS makes 2,453 Cases.

Which is equivalent to a saving of £5/13/- per ton of Nails, to which must be added the saving in rail freight on the basis of 13 cwt. to the ton.

To be genuine, cases must bear the "TITAN" Brand and Registered Number 16,333/28.



Demand "TITAN" Products from your supplier and if not stocked, apply direct to—

**The Titan Nail & Wire Pty. Ltd.**

Lorimer Street, South Melbourne, S.C.5  
Victoria

## Hopkins & Lipscombe

(Stanley H. Pogson, Prop.)

Licensed  
Farm Produce Agents

**Municipal Markets  
Sydney**

Quick Sales

Prompt Returns

Shipping Nos. Vic. and Tas. 58  
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Bankers: Bank of N.S.W., Haymarket

TELEPHONE: MA 3846. ESTABLISHED 1900

## W. MUSGROVE

and Son

LICENSED FARM  
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**8, City Fruit Market, Sydney**

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BANK OF NEW SOUTH WALES, HAYMARKET

Our Motto:

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*You will be Satisfied by Giving  
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No. 53

QUEENSLAND, NORTHERN RIVERS

No. 18

## N.S.W. Fruit Trades — Personal Sketches

### F. CHILTON.



Mr. Harry Chilton.

Mr. F. Chilton is one of the largest handlers of fruit in Sydney, and is conversant with every avenue of the trade. He takes a keen interest in all matters relating to the marketing of fruit of all kinds, and as a judge of fruit has few equals. He is held high in the esteem of growers and his fellow merchants, and when Mr. Chilton makes a statement regarding the industry, it may be regarded as authentic. His business extends to all parts of the Commonwealth, and his name is known

to growers in even the remotest fruitgrowing areas from Southern Tasmania to the north of Queensland. A fair deal to both grower and buyer has earned for him a reputation that one may be proud of.

The distributing section of the business is carried out in premises apart from the market by a separate staff. The commission section is carried on at No. 10 Municipal Markets under the provisions of the Farm Produce Agents Act.

Here, Mr. Chilton has the able assistance of a large staff, headed by his son, Mr. Harry Chilton, who promises to follow in the footsteps of his able parent, for he has already displayed marked ability in handling the problems of fruit marketing.

### WALTER MUSGROVE.



Mr. W. Musgrove.

Mr. Walter Musgrove is an agent whose reputation for integrity is known throughout the Commonwealth. From early youth, Mr. Musgrove has been engaged in the marketing of fruit in N.S.W., and there is little left for him to learn in the trade with which he has for so long been associated. As a member of the fruit section of the Chamber of Commerce, of which he has twice been chairman, he takes an active

part in its affairs, and his experience has proved invaluable to that body. He is senior vice-president of the Chamber of Fruit and Vegetable Industries, and one of the agents selected by the Tasmania Fruit Advisory Board. He has been a J.P. for over 25 years. Established in 1900, in the old Belmore market, the firm quickly gained the confidence of growers. They were among the first to occupy premises in the City Markets when they were first built, and they have been located in Store No. 8 there ever since. The position is a convenient one, and this, combined with the energy of Mr. Walter Musgrove, Mr. J. W. Musgrove, Jr., and staff, has resulted in an ever-increasing clientele.

### JOHN JENKINS.



Mr. L. J. Jenkins.

Progress, and still further progress, is the chief characteristic of the firm of Messrs. John Jenkins. Under the capable guidance of its three principals—Messrs. L. J. Jenkins, E. A. Jenkins and G. E. Jenkins—supported by an ample and able staff, the business of the firm has increasingly developed.

Every phase of the fruit business is studied carefully. Keenness of attention to all details is a marked characteristic. Promptness of advice of markets and in rendering account sales and making

payments of any nature places this firm in the highest esteem.

Mr. L. J. Jenkins, the head of the firm, is probably the best-known man in the fruit industry of N.S.W. He is chairman of the N.S.W. Chamber of Fruit and Vegetable Industries, and his work in connection with every aspect of the trade has been highly spoken of by all who have come in contact with him in his official capacity. The industry in general has benefited from his knowledge of its requirements.

### PRODUCERS' CO-OP. DISTRIBUTING SOCIETY LTD.

Mr. J. W. Blick, manager of the fruit section of the Producers' Distributing Society, is a well-known figure in the fruit trade of N.S.W. He is prominently associated with every aspect that makes for the better marketing of fruit, and has spent a considerable time abroad studying world markets.



Mr. J. W. Blick.

On his return from abroad last year he wrote in a very interesting series of articles, his impressions of the export side of the industry. He has for years urged improvement of refrigerated space for fruit shipments abroad, and it is due to his efforts and others interested in the trade that considerable advance has been made in this direction.

In 1925 Mr. Blick was chairman of the fruit section of the Chamber of Commerce, and at the present time is on the executive of both the Apple and Pear Export Council and N.S.W. Citrus Packers' Association.

The Melbourne office of the P.D.S. is located at No. 7 Wholesale Fruit Market, where a substantial business is transacted. The manager is Mr. J. McNamara, under whose personal supervision all sales are conducted.



**JAMES SLATER.**

Mr. Alfred Slater.

Mr. Alfred Slater, who has charge of the old-established business of James Slater, is a prominent figure in all matters relating to the trade, and has held many prominent positions in this regard. The firm, which was established in 1882 in the old George-street Fruit Market, has clients in all States who supply them with fresh fruits for the N.S.W. trade. They handle enormous quantities of berry fruits, and also do a large business in tropical and other fruits.

The firm is one of the oldest-established in the Sydney trade, and has always rendered satisfactory service to growers. They gained prominence through the handling of berries, also tropical fruits such as Bananas, Pineapples, Papaws and Custard Apples. This firm, specialising in a town trade, is in a favorable position to place these lines to advantage. Cheques are rendered weekly, and all goods are sold under the personal supervision of Mr. Alfred Slater.

**A. J. COOPER.**

Mr. A. J. Cooper.

This old-established firm has been in the fruit industry of Sydney for over 40 years. They handle fruit on behalf of growers in all States, and are also importers and exporters of fruit. The business is carried on by Mr. A. J. Cooper, Senr., and his two sons, A. C. and E. W. Cooper. Probably no one in the trade has a more extensive knowledge of the requirements of the fruit industry than A. J. Cooper. For many years he has taken an active part in matters relative to the industry,

and has held many important posts. Growers can be assured of expert handling when consigning fruit to this firm for disposal in Sydney. A. J. Cooper is situated on the Quay-street frontage of the Municipal Markets.

**F. G. STEVENS & SONS.**

Mr. F. G. Stevens.

This old-established firm of growers' agents commenced in Sydney during 1901 in that portion of the old Fruit Markets that is occupied by the Capital Picture Theatre in Hay-street. Mr. F. G. Stevens, senior, who founded the business, is still in harness, but the duties of management of the sales department has fallen upon the capable shoulders of his son, Charles F. Stevens, who has proved himself an indefatigable worker in the interests of the firm in handling the growers' produce to the best advantage.

A very large business is carried on with growers in N.S.W., Queensland, and Tasmania, and now the firm are

extending their business to other States. Growers can with confidence consign their produce to this firm, who have established a name for fair dealing at the Sydney Markets that places them in the forefront of that body of agents who are affiliated with the Chamber of Fruit and Vegetable Industries.

The firm has been a member of the Chamber since its inception, and the slogan "Service With Integrity" is no idle term in the conduct of their business.

**HOPKINS & LIPSCOMBE.**

Mr. S. G. Pogson.

The firm of Hopkins & Lipscombe is an old-established fruit agency business that is controlled by Mr. Stanley G. Pogson, who took charge of the business about twelve years ago at the City Markets. The old firm was established in 1875, in York-street, and later carried on business at the old Fruit Exchange, in Bathurst-street.

When Mr. Pogson took over the business twelve years ago, he had already had twenty-one years' experience of the fruit trade with the firm of F. H. G. Rogers and

was thus fully equipped to assume control of a business that needed an energetic man to expand its activities.

Still carrying on under the name of Hopkins & Lipscombe, Mr. Pogson has certainly placed this business on a high level, and has earned the confidence and respect of all connected with the trade.

*Service with Integrity*

**H. P. WOODWARD**

Licensed Farm and Produce Agent

**City Fruit Markets  
SYDNEY**

£1,000 FIDELITY BOND.

References, Bank of New South Wales.

Telegraphic Address, "Woodward"  
Code, Bentley's.

**SHIPPING NO. 281**

Phones: M.A. 2612 and X 2317.

## NEWCASTLE, N.S.W.

## Wants More Fruit From Growers.

The growth and development of this very fine industrial city during the past ten years have been phenomenal, and the prospects as a large consumer of primary products look very promising in the near future.

The population, which is a large one, approximately 200,000, is mostly dependent upon the coal and iron industries, but it has many facilities and natural resources to help it. It is only reasonable to assume that the people of this city, who are supplying practically the whole of the Commonwealth with all classes of steel and iron products, would require large quantities of fresh fruit and vegetables throughout the year.

The greater portion of the supplies have, in the past, been purchased from the Sydney Market, which, in addition to being inadequate, has been unsatisfactory from both the retailers' and consumers' point of view, for some considerable time. This is principally due to the double handling and extra expenses incurred by purchasing supplies on the Sydney Market, which makes it much dearer to the consuming public. The requirements of this market is increasing each year as large quantities are necessary to supply the northern coal fields as well. Large mining towns such as Cessnock, Maitland and Kurri Kurri, receive fruit from Newcastle, which is the fountain head of supplies.

Growers interested in exploiting this market would do well to remember these cardinal features:—(1) that the cold storage facilities are the finest in the State, at reasonable cost; (2) that good fruit well packed and graded, will realise maximum values, in comparison with

other markets; (3) that Newcastle has large and up-to-date markets; (4) the difference in rail and boat freight is very little.

## N. AND A. FRUIT AND PRODUCE CO.

This firm, whose head office is at 2 Steel-street, Newcastle, where they handle large quantities of fruit and vegetables, are also at the Municipal Markets, Sydney, on the Quay-street frontage. The principals are Messrs. N. Alderson and T. Neilly, both of whom have grown up in the industry. Prior to last year they had confined their operations to the Newcastle area, where they have established a sound business. They have extended their operations to the Sydney Markets, and by prompt account sales and reliable advice have gained a place among the leading agents. This firm considers Newcastle and district a market for the highest standard of fruit, and invite growers to send of their best. Money is plentiful in the industrial areas of the north, and residents are well able to purchase high-class produce. Growers wishing to supply this market should get in touch with the N. and A. Fruit and Produce Co.

## H. P. WOODWARD.

Mr. H. P. Woodward is one of the younger generation of agents who have come prominently to the fore at the Sydney markets. He has worked up a fine business through steady application to the growers' interest, and his constant endeavours to obtain the best available prices for their products. Growers are reminded that they should label cases sent by steamer with his shipping number, 281. Mr. Woodward will give equal attention to both large and small consignments.



# N. & A. FRUIT AND PRODUCE COMPANY

Licensed Farm Produce Agents No. 2253

Head Office: **2 Steel Street, Newcastle**

BRANCH: 6 CITY MARKETS, SYDNEY.

References: Bank of New South Wales.

Telegraphic Address: "NANDA."

**We Want Your Business**

**In Return We Offer**

**Good and Prompt Service**

FURTHER PARTICULARS AND SHIPPING NUMBERS ON APPLICATION.

Phones: Newcastle 1365.

Sydney M.A. 8428.



Over Half a Century of Reputable Trading  
Stands to the Credit of —————

# J. DAVIS PTY. LTD.

## FRUIT MERCHANTS

No. 8, Wholesale Fruit Market, Melbourne

ACCREDITED AGENT FOR—

Victorian Central Citrus Association Pty. Ltd. ————— Murray Citrus Growers' Co-operative Association Ltd.  
South Australian Tomato Growers' Association.

GROWERS ARE INVITED TO SEND THEIR PRODUCTS WHICH WILL BE  
ASSURED HIGHEST RULING RATES. AND YOU ARE PROTECTED BY  
FIDELITY BOND LODGED WITH DEPARTMENT OF AGRICULTURE (VIC.)

Cable Address: "DAVIS," Melbourne.

Telephone: F 3232.

Codes: "ABC," 4th and 5th Editions.

Bankers: The National Bank of Australasia,  
Collins Street, Melbourne.

All Correspondence to Box 148B.

Telegraphic Address: "Listeria," Melbourne.

Codes: Bentley's A.B.C., 5th Edition



Postal Address: G.P.O. Box 555D.

Telephone: F 6341.

Private: Windsor 4535.

# GEO. LISTER Pty. Ltd.

(Managing Director: J. R. VAIL)

Wholesale Fruit Merchants

Licensed Commission Agents

## Importers and Exporters

Selected Agents for all Growers' Organisations throughout the Commonwealth.

No. 12, Wholesale Fruit Market  
Melbourne

Having carried on a successful business for over half a century, our name stands high in the Wholesale Fruit Trade of Australia. Our spacious premises at Melbourne Wholesale Fruit Market are admirably adapted for the conduct of our large business, and growers are assured that our best efforts are always at their disposal.

Bankers: The Commercial Banking Co. of Sydney, Melbourne Branch.

Fidelity Bond Guaranteed by Yorkshire Ins. Co.

# The Distribution of Fruit in Melbourne

**Interesting Story of Marketing..  
£278,814 Invested in Equipment..  
Frontage of 1 1/4 Miles**

**T**HE FIRST FRUIT MARKET on record in Melbourne was described by Mr. G. B. Minns, formerly Superintendent of Markets, in an address to growers at East Burwood on 14/5/36.

Away back in October, 1839, the Parliament of New South Wales, of which Victoria then formed a part, passed an Act authorising the establishment of markets in the towns of the Colony. Citizens of Melbourne then organised a movement to obtain the necessary power to establish a market in the then rather primitive village.

A meeting held on January 21, 1841, decided to take steps to establish a market, and this action was the actual commencement of local government in Victoria. Rolls were prepared, and on November 2, 1841, eight men were elected as Commissioners of the market. Mr. James Simpson was made chairman and the Commission included John P. Fawcner.

The first sale was held on November 8, 1841, only about six years after John Batman's first party visited Melbourne. The market was held on what later became known as the Western Market, on Market and Collins streets, then the heart of the little settlement. The first market contained plenty of vegetables, but no fruit. Watermelons of the sugar variety were on sale.

The Commission controlled the market until 1842, when the Town Council, then newly formed, took control. In 1847, another market was established at what is now known as the Eastern Market. When the Western Market burned down in 1853, growers transferred their business to the Eastern Market, which developed into the main general market.

The Western Market was rebuilt in 1857, and became the centre of wholesale selling of fruit by merchants and agents until the removal to the present location in November, 1930. During the past few years, there has been a decrease of Chinese stall holders. In 1924 there were 81 Chinese holding stands, now there are only 46, a decrease of 43.2 per cent., thus the Chinese growers have become a disappearing factor in the market. Between

1916 and 1924, preference was given to returned soldiers, but since the latter date general growers were enabled to obtain stands. At the moment there is a long waiting list of growers desiring stands.

## Equipment and Management.

Facilities for the wholesale and retail marketing of fruit in Melbourne are provided by the Melbourne City Council at the Wholesale Fruit Markets and the Victoria Market covering an area of 16 acres and extending over four city blocks. The management of this valuable city property and service to the citizens of Melbourne comes under the Superintendent of Markets, now in the person of Mr. T. G. Compton.

For the past 14 years, until his recent retirement owing to having reached the retiring age, Mr. G. B. Minns was Superintendent of Markets and saw the transfer of the marketing centre from the old Western Market to the present location. Mr. Compton was called from the Engineers' Department in March, 1937, after 25 years of efficient service to the City Council.

## The Wholesale Market.

Very fine facilities are provided for some 60 wholesale fruit merchants in the south wing fronting Franklin-street. Here is handled all classes of fruit by the wholesalers and distributed through the retail stores throughout the city and wholesale lots supplied throughout the State.

The wholesale market operates every day except Sunday, and is the clearing house for tremendous quantities of fruit throughout every season of the year. The 60 companies employ approximately 360 hands permanently, and so represent an important part of the industry in Victoria.

## Growers and Retail Market.

The Victoria Market is that portion given over to growers and retailers dealing directly with the public and distributing fruit and vegetables in smaller lots.





# HERBERT WILSON Pty. Ltd.

WHOLESALE FRUIT MERCHANT AND GROWERS' AGENT

Agents for the  
Murray Citrus  
Growers' Association,  
South  
Australia.

Victorian Central  
Citrus Association.

South Australian  
Tomato Growers'  
Association.

South Australian  
Celery Growers'  
Association.



Sole Agents for  
the well-known  
"Olivewood"  
Citrus.

Bankers:  
NATIONAL  
BANK OF  
AUSTRALASIA  
(Western  
Branch),  
Melbourne.

Growers  
Protected by  
Fidelity Bond.

No. 10, Wholesale Fruit Market, Melbourne

Telephone - F 6444

SHIPPING  
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41

*For Reliable Results Always !*

## T. STOTT & SONS

**FRUIT MERCHANTS**

Established over 50 Years.

26 Wholesale Fruit Market, Melbourne

(And at Victoria Market.)

GROWERS  
PROTECTED  
BY  
FIDELITY  
BOND.

PROMPT SETTLEMENT.

Country and Interstate Order Trade Supplied.

Stencils or Labels sent on Application.

Telegraphic Address: "STOTTSONS, MELBOURNE."

Bankers: Bank of Australasia, Collins Street, Melbourne.

ESTABLISHED 1882.

TELEPHONE: F 4370.

There are 978 stands held by fruitgrowers, vegetable growers, orchardists and florists, and these provide a busy scene upon market days. In addition, the new M shed contains 48 stands for agents for Peas and Beans. Across the street, and connected with the Elizabeth-street entrance to the meat and fish market, are G H and I sheds, in which there are stands for 128 retailers of fruit and food products, small merchants rather than growers.

In the retail sections, therefore, it can be estimated that some 2,500 persons are engaged in the distribution of fruit in a retail manner on three or more days per week.

As showing the steady and maintained increase in the number of stallholders, the following tables give the average attendances, per days stated, in the last nine years.

Monday, Wednesday and Friday Markets.										
	1929	1930	1931	1932	1933	1934	1935	1936	1937	Daily average. (7 years)
Orchardists	—	—	29	16	37	39	36	38	48	34.71
Vegetable growers	—	—	46	53	58	59	70	79	108	(7 years) 67.57
Total	39	72	75	69	95	98	106	117	156	(9 years) 91.88

Tuesday, Thursday and Saturday Market.										
	1929	1930	1931	1932	1933	1934	1935	1936	1937	Daily average.
Orchardists	198	302	243	196	292	288	271	241	297	258.66
Vegetable growers	452	444	456	488	456	425	437	468	477	455.59
Florists	39	45	46	53	52	50	52	53	57	49.66
Gum leaves	22	21	17	15	14	13	14	13	12	15.66
Totals	711	812	762	752	814	776	774	775	843	778.77

Thus the latter three days provide the biggest days for trade and the recognised days for orchardists to meet their consuming public customers, whilst florists keep to these three days entirely.

#### Hours of Trading.

The hours observed in the wholesale section are 4 a.m. Saturdays, 5 a.m. Tuesdays and Thursdays, and 6 a.m. on Mondays, Wednesdays and Fridays. Wholesalers claim that these hours are too early and should be altered. They point out that in Brisbane the market opens at 8 a.m., Sydney at 7 a.m. and Adelaide at 7 a.m. in Summer and 7.30 a.m. in Winter. They claim that if the opening hours for wholesalers were May to October 7 a.m., and November to April 6 a.m., which would still be earlier than either Brisbane or Sydney, the fruit coming by rail during the night would be available and would not miss the market for that day, thus being an advantage both to country growers and metropolitan retailers.

The hours in the retail section comprise two classifications in that growers begin to sell at 4 a.m. on Saturdays, 5 a.m. on Tuesday and Thursday, 6 a.m. on Friday, Wednesday and Monday. All grower-selling is concluded at 10 a.m. Retailers' stalls open at 7 a.m. daily and close at 1 p.m. on Saturday, 3 p.m. on Tuesday and Thursday and 9 p.m. on Friday nights. No retail selling is done at stalls on Monday and Wednesday.

#### Stall or Stand Rents.

The rents charged by the City Council are arranged to suit the tenants and the marketing conditions. For instance, growers holding permanent stands pay 26/- per quarter entitling them to attendance on any three days per week. Growers not taking permanent stands are charged 1/- per day, whilst agents, dealers and retailers pay a flat rate of 2/6 per day. Checkers are in attendance to assign stands or act as umpires if necessary, and collectors collect the casual tenants' fees each day.

#### Transportation.

It is interesting to note that when the first check was made, in 1927, transportation was largely by horsedrawn

vehicles, but the change to motor vehicles has made this method of transportation almost universal, certainly for long distance haulage. A study reveals the percentage of horse-drawn vehicles of growers by years since 1927:—

	Per cent.		Per cent.
1927	55.9	1933	16.7
1928	41.8	1934	14.0
1929	35.6	1935	12.4
1930	20.3	1936	10.0
1931	18.8	1937	9.4
1932	19.3		

A check taken of vehicles parked around the market shows that in June, 1935, there were seen an average market day attendance of 1,379 vehicles, and in December, 1935, of 1,720 vehicles. Buyers' vehicles represented about twice as many vehicles as those of growers.

#### SYDNEY BANANA RIPENING PLANT.

Installed by Jas. Budge Pty. Ltd.

The Banana Marketing Board for the State of N.S.W. is now installing, in the Municipal Markets, Ultimo-road, Sydney, the largest and most modern plant in Australia for the storage and ripening of Bananas.

The store will comprise 14 rooms, each having a capacity exceeding 200 cases. It will be constructed throughout in brick with cork insulation, and provision has been made for a considerable increase in capacity at a later date.

Automatic control equipment will ensure the correct temperature and humidity in the rooms. This entails the use of refrigeration, heating and cold gas admission.

The contract for the installation of the plant is in the hands of Messrs. James Budge Pty. Ltd.

It is hoped to give a more comprehensive description of the equipment in a later issue of the "Fruit World."



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S.A. Celery Growers' Association.  
Committee of Direction of Fruit Marketing (Q'ld.).  
Geraldton and District Tomato Growers' Association  
(W.A.).  
Northern Districts and Geraldton Tomato Growers'  
Association (W.A.).  
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F 3933.

## SPECIAL NOTICE TO FRUITGROWERS

**All Members  
under  
Fidelity Bond**

In response to numerous requests from growers for information as to who are members of the  
**Wholesale Fruit Merchants' Association of Victoria**  
the following list is given. All are members of the above Association, and are registered  
firms carrying on business in the

WHOLESALE FRUIT MARKET, MELBOURNE.

STAND NUMBERS ARE AS INDICATED IN PARENTHESES.

T. STOTT & SONS (26).  
H. L. E. LOVETT & CO. (23).  
A. E. PITT (14).  
J. DAVIS PTY. LTD. (8).  
W. S. TONG (31).  
SILK BROS. PTY. LTD. (24-25).  
J. G. MUMFORD (35).  
GOLDEN VALLEY FRUIT CO. PTY. LTD.  
(15).  
J. W. ROSS (13).  
H. M. WADE & CO. (21).  
DAVID SMITH PTY. LTD. (3).  
SILBERT SHARP & DAVIES PTY. LTD. (17).  
WATKINS FRUIT COMPANY PTY. LTD. (5).  
P. A. PATRIKEOS (36).

G. WOOLF & SONS (29-30).  
R. CORNISH & SONS (5).  
J. HYMAN & SON (51).  
HERBERT WILSON PTY. LTD. (10).  
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TIM YOUNG & CO. PTY. LTD. (18).  
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YEE HOP LOONG & CO. (32).  
H. LOUEY PANG & CO. PTY. LTD. (4).  
WING YOUNG & CO. (38).  
D. MENTIPLAY & CO. PTY. LTD. (27).  
PRICE & KING PTY. LTD. (2).  
REGAN & KENNY (Successors to Wm.  
Sweeney). (33).

Correspondence is invited by the Association.

Office : 21-Wholesale Fruit Market,  
Queen Street, Melbourne. Phone F 4866.

# Citrus Production in Australia

**Acreage: 47,500 Acres**

**Slight Decrease Since 1936**

**N.S.W. the Greatest Producing State**

**I**N all the States of the Commonwealth, with the exception of Tasmania, combinations of climatic and soil factors occur, which favor the commercial cultivation of citrus fruits.

The principal citrus producing State is New South Wales with extensive plantings in the central coastal districts and considerable areas in the Murrumbidgee and other irrigation settlements.

The main producing areas in Victoria, which ranks second in importance, are located at Mildura, and contiguous irrigated districts on the River Murray, and also at various other settlements embraced in the Valley of the Goulburn River, a tributary of the Murray.

Along the valley of the Murray, extending into South Australia, important areas of commercial citrus occur at Renmark and other irrigated districts particularly favored for the development of this industry. In the central districts of the coastal plain citrus is cultivated under natural rainfall conditions with irrigation as an adjunct during dry periods.

**Employs 4,000 Hands Permanently.**

The average citrus acreage per grower approximates only five acres, owing to the fact that a considerable number of orchards comprise mixed plantings with either citrus, vines or deciduous fruit trees predominating.

It is considered that the industry gives employment in the field to the equivalent of from 4,000 to 4,500 hands, including growers, all the year round. In addition to this, the demands of the citrus grower create a considerable measure of employment throughout a range of other industries, the more important of which are enumerated hereunder:—

**Iron and Steel:** For implements and machinery, galvanised iron, etc.

**Timber and Building:** For farm buildings, packing sheds, cases.

**Transport**—Road and rail services.

**Chemical:** For fertilisers and spraying materials.

**Nurseries:** For the propagation of trees.

**Oil:** Motor spirit and tractor fuel.

**Australian Consumption Increases.**

During recent years a great deal has been done to popularise the use of citrus fruits in Australia. The public taste has been cultivated in the drinking of orange juice throughout the year, for example. Expansion in the home markets—brought about by wider distribution and the active participation of public authorities and organisations connected with the industry in advertising—has done much to place Australia amongst the highest citrus consuming countries in the world. Orange consumption now approximates 28 pounds per head of population.

**Citrus all the Year Round.**

Under normal seasonal conditions, the volume of production and spread of the marketing period in Australia enable the demands of the home market to be adequately supplied throughout the year. For this reason the imports of citrus fruits into Australia for a number of years have been negligible in comparison with production.

The main marketing period of Australia for Oranges extends over the months of July to November inclusive, and it is during this time that the bulk of the export

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AUSTRALIA IS AMONGST THE  
HIGHEST CITRUS CONSUMING  
COUNTRIES OF THE WORLD.

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**A. E. PITT**

Member of Wholesale Fruit Merchants' Association of Victoria.

Accredited Agent for Growers' Organisations in All States.

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Melbourne.**CONSIGNMENTS  
SOLICITED**

shipments are made. During the months of July, August and September, supplies of Washington Navel Oranges are at their peak and as these diminish they are followed in the months of October and November by the main crop of the Valencia Oranges.

The main Lemon crop is harvested during the Winter and Spring followed by a lighter Summer crop. Variable supplies are therefore available throughout the year, but the peak period for export occurs during the months from June to September.

**Orderly Marketing.**

Although no statutory control exists in connection with the marketing of citrus fruits, either in Australia or for export, there are, in the larger producing States, voluntary organisations of growers which assist in the promotion of orderly marketing methods on the domestic market and the exploitation and development of overseas trade. In addition, there are several organisations of growers which, whilst not exercising any market control, function for the promotion of the general welfare of their members and of the industry as a whole.

Organisations in the three main producing States are affiliated to constitute the Federal Citrus Council of Australia which represents the industry from a Commonwealth point of view. The functions of this Council are to assist in the promotion and advancement of the citrus industry and it is the medium through which concerted action may be taken by the affiliated organisation.

**Citrus Area by States.**

In spite of the fact that the area under production of citrus fruits was less by 1,741 acres in 1937 than in 1936, more citrus fruit was sent overseas in the past year than in 1936. By States, the acreage under citrus fruits was: N.S.W. 28,222, Vic. 7,066, Qld. 3,395, S.A. 5,110, W.A. 3,708, and F.C.T. 5, making a total in 1937 of 47,506 acres as against 1936 with 49,247 acres.

**Gross Production Value.**

The figures for 1936, which are the latest obtainable from the Commonwealth, show that the total gross value of citrus fruits produced in Australia reaches £1,575,662. The value by States is: N.S.W. £806,530, Vic. £264,987, Qld. £110,665, S.A. £241,424, W.A. £152,056.

**Export Quantities.**

In the first nine months of 1937, exports of Oranges increased by 60,334 cases over 1936. Whilst shipments to the United Kingdom decreased by 10,755 cases, New Zealand took 40,461 cases more than in 1936, and Canada also increased her receipts by 3,617 cases.

Lemons, too, increased in total volume overseas by 4,687 cases. Again exports of Lemons to Great Britain dropped, but supplies to Canada increased.

**Exports of Oranges to November 30, 1937.**

Destina-	N.S.W.		Vic.		S.A.	W.A.		Total Cases	
	1937.	1936.	1937.	1936.	1937.	1937.	1936.	1937.	1936.
U.K.	5,325	739	27,479	—	—	1	—	33,544	57,308
Can-	—	—	—	—	—	—	—	—	—
ada	20,890	—	—	—	1	—	—	20,891	4,665
N.Z.	34,980	15,897	186,820	—	—	—	—	237,697	139,936
East-	—	—	—	—	—	—	—	—	—
ern	20,858	4,281	966	—	2,879	—	—	28,984	11,134
Other	2,476	1,096	181	—	40	—	—	3,743	3,806

**Totals:**

1937 84,529 22,018 215,397 (b) 2,920 (c) 324,859

1936 47,905 3,573 164,020 1,346 — 216,849 (a)

- (a) Includes Queensland—5 cases.  
 (b) S.A. figures to November 27.  
 (c) W.A. figures to November 5.

In supplying the latest figures available, the Department of Commerce, Canberra, states that the principal movement in exports, since the issue of previous figures to September 30, has been the continuation of shipments to New Zealand. During October and November 78,564 cases were shipped to that destination, 32,579 cases from New South Wales, 15,891 cases from Victoria, and 30,094 cases from South Australia.

#### Lemons (to September 30, 1937).

Destination.	N.S.W.	Vic.	S.A.	W.A.	1937.	1936.
U.K.	1,558	4	1,404	1	2,967	4,816
Canada	8,245	—	—	—	8,245	2,046
The East	751	315	151	110	1,327	1,067
Other	1	248	15	—	264	187
Total 1937	10,555	567	1,570	111	12,803	—
Total, 1936	7,152	576	163	225	—	8,116

#### Research Work.

Valuable research work is being done in New South Wales upon all phases of citrus culture. The Hawkesbury Agricultural College is continuing their breeding experiments at Grafton. In a report received late in December, the Director of Plant Breeding, Mr. H. Wenholz states:

An attempt is being made to evolve if possible, a later maturing Navel Orange than the Washington Navel. With this object, seeds found by chance in Washington Navel fruits and also seeds obtained from fruits of this variety developed from crossing with Late Valencia, have been raised as seedlings at Narara Nursery. Some of the former seedling trees have blossomed freely this year and are expected to fruit next season. Some seedlings of the Washington Navel-Valencia cross are to be budded on to rough Lemon stocks at Narara and planted out at Grafton.

Another objective in citrus breeding is to evolve a late maturing Orange which will be superior in quality to Valencia. Crosses of this variety have been made with Whitby Seedling, White Siletta and Egg-shaped St. Michael, and some seedlings of these crosses are also to be transferred to rough Lemon stocks for planting at Grafton.

Similar crossing programmes are being undertaken with Grapefruit with the object of producing improved varieties.

The phenomenon of polyembryony is known to occur frequently in citrus and some preliminary investigations made at Grafton show that most varieties of Grapefruit have two, sometimes three, and occasionally four embryos contained in a single seed. On the other hand, Mandarins have so far been found to be mono-embryonic. In cross-breeding work with citrus the use of mono-embryonic varieties as the mother parent ensures a better chance of true hybrid progenies being raised.

Happiness is not the end of life—character is.—Henry Ward Beecher.

The ladder of life is full of splinters, but they always prick the hardest when you're sliding down.

## S.A. Fruitgrowers' and Market Gardeners' Association

### Successful Years' Operations.

THE South Australian Fruitgrowers' and Market Gardeners' Association reports another successful year of operations. The Association not only deals with local matters affecting its members, but one of its functions is to establish and develop new markets. By the adoption of a progressive development programme in this regard, the growers of many commodities have received considerable benefits.

The principal line exported is the Glasshouse Tomatoes which are grown on the fertile plains in close proximity to Adelaide. Melbourne is the big market for this product, but in addition the Association forwards considerable quantities to the Western Districts of Victoria. Although in recent years there has been a steady increase in the erection of glasshouses, the quantities available for export have shown a steady decline. Whereas a few years ago the growers enjoyed almost a monopoly of the Melbourne market a considerable portion of the season, that is not the case to-day. Production of Tomatoes in the north of Western Australia has increased considerably, and this fruit clashes with the early Adelaide deliveries. This year 100,000 half cases were received in Melbourne from the West. Until comparatively recently the so-called "local" Tomatoes commenced to arrive on the Melbourne market after the first week in December—the development of Balranald (N.S.W.) and adjoining districts means that "locals" make their appearance very much earlier. With

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Private—

Mr. J. Hyman, M 3075.

Mr. H. Hyman, Win. 3073.

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MERCHANTS

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**Wholesale Fruit Market,  
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of Victoria Ltd.

Agents for—Committee of Direction of Fruit  
Marketing (Qld.); Banana Growers Federa-  
tion (N.S.W.); Wholesale Fruit Merchants  
Association of Adelaide Ltd. (S.A.).

Voluntary Fidelity Bond lodged with Dept. of  
Agriculture for Growers' Protection.

EXPERIENCED SALESMEN ENABLE US TO  
HANDLE ANY QUANTITY IN A CAPABLE  
AND EFFICIENT MANNER.

PROMPT RETURNS A SPECIALITY.



a declining production and lower price levels, the South Australian growers have difficult times ahead, but this Section of the Association is so well organised that the problems confronting the industry to-day are certain to be faced with determination. Despite the severe competition from many sources the quality, packing and grading of South Australian Tomatoes is outstanding.

**Celery.**—Owing to climatic conditions in growing areas, the quantity of Celery exported to the Eastern States showed a decline when compared with the previous year. However, exports to Brisbane and Tasmania were increased, and those markets firmly established. The Perth market is steadily increasing, and now South Australian Celery is well and favorably known throughout the Commonwealth. The growers are to be congratulated upon having firstly of all developed such a splendid quality article, and secondly, of having marketed it so well. A vigorous advertising policy has assisted a good deal in the success of this section of the industry.

**Cherries.**—The Cherry Section continues to increase its membership, and the development of new markets have received considerable attention. Not only does the Section control the Interstate marketing, but it deals with processors as well. Here again the outstanding quality of the South Australian Cherries, and the way they are packed and handled, assists greatly in the progress the

Section is making. The Melbourne and Western Districts (Victoria) markets are now firmly established.

Although the remainder of the Sections are not at present greatly interested in Interstate export, they at times utilise the marketing machinery to exploit the various markets.

**The Merchandise Section** (South Australian Fruit-growers' Society Ltd.) is making very rapid strides, and the increasing turnover suggests that growers fully realise the benefits which accrue from purchasing their requirements from their own Company.

**Citrus.**—This Section, although it attends to price fixing in connection with the Adelaide market, controls the export of all South Australian citrus (except the Murray Valley Areas) to New Zealand, and much effective work is done in this connection. The Oranges are grown in the Torrens Valley, Salisbury and the Inman Valley.

The principal executive officers of the Association are:—President, Mr. W. J. Bishop; Secretary, Mr. A. Stuart; Tomato Section Committee Chairman, Mr. F. G. Gill; Celery Section Committee Chairman, Mr. G. Strange; Cherry Section Committee Chairman, Mr. W. J. Bishop; Citrus Section Committee Chairman, Mr. N. T. Hobbs; Interstate Representatives, Melbourne, Mr. C. W. McRostie; Sydney, Mr. D. G. Wills; Brisbane, Mr. H. Hansford-Reeve.

## Frost Prevention

### Briquettes Claimed to be Less Costly

ALL parts of Victoria are subject to frost to a greater or lesser degree, depending upon the local conditions, although low-lying land usually suffers the worst effect. Certain fruit-growing areas, therefore, will always be subject to the danger of frost damage, and since no insurance company will carry this risk, the grower himself must take steps to protect his crop.

The damage caused by a frost is frequently much greater than the actual loss of the crop, as the plant suffers definite injury and may not recover for several seasons. For many years, artificial heating has been used in Europe with some degree of success, but only of late years has the matter been introduced into Australia.

Owing to differences in climatic conditions, together with the fuels available and relative costs of these, the methods differ slightly from those practised overseas. Smudging—a system for creating a smoke screen over the patch—was first tried with very little success. Only light frosts can be dealt with and very little control of the smoke is possible.

Direct heating is now recognised as being the most practicable and effective method. Air temperatures to the "ceiling" at a height of 20-25 ft. can be maintained at a safe temperature of 3-4 deg. above danger conditions by means of small fires burning without smoke.

Oil and Yallourn briquettes are the only fuels which can be used successfully, and numerous experiments have been made with both fuels. It has been found that some 60 heaters per acre are required when using oil burners, while about 50 are necessary with Yallourn briquettes. The minimum safe temperature and length of burning period vary with the type of plant to be protected.

Personal opinions differ as regards the relative merits of the two classes of fuel available, but it seems to be largely a matter to be determined on a basis of cost and convenience. There is little difference as regards handling, but once the burners are filled there will be no loss through leakage with briquettes, as there may be with oil. With either fuel, there is no difficulty experienced in lighting the heaters very rapidly.

It has been found that a heat release of about 2,500,000 B.T.U./acre/hour will deal with an average frost; this corresponds with a fuel consumption of approximately 300 lbs. of briquettes or 20 gallons of oil per acre per hour. Tests show that this will maintain an average temperature difference of 3½-4½ deg. F.

Oil heaters cost about 2/- each, and may be expected to have a life of about five years, whereas briquette heaters cost about 5/6 each and may be expected to last ten years with reasonable care. The following table shows a comparison of the costs of the two types of fuel for an area of one acre in the Redcliffs district.

Kind of Fuel.	Heat value B.T.U./lb.	Price on site.	Cost per 10 <sup>6</sup> B.T.U.	Quantity used/hour.	Total fuel cost/hour.	Depreciation cost/hour.	Total cost/hour.
Briquettes	9,500	40/- ton	1/10	300 lbs.	5/4	1/10	7/2
Oil	18,500	8d. gal.	4/-	20 galls.	13/4	1/7	14/11

In conclusion it may be stated that direct heating in some form is necessary to protect fruit from frost damage in many areas in this State. Either fuel oil or Yallourn briquettes may be used in special heaters, briquettes showing the lower cost. It is well to remember also that briquettes are entirely produced in our own State, while oil is an imported product.\*

# Items of Interest

## The Age of a Horse

The following verses provide a convenient form of memorising ways of telling the age of a horse:—

To tell the age of any horse,  
Inspect the lower jaw, of course;  
The six front teeth the tale will tell,  
And every doubt and fear dispel.

Two middle nippers you behold  
Before the colt is two weeks old;  
Before eight weeks, two more will come,  
Eight months the corners cut the gum.

The outside grooves will disappear  
From middle two in just one year;  
In two years from the second pair—  
In three years "corners" too are bare.

At two the middle "nippers" drop;  
At three the second pair can't stop;  
When four years old the third pair goes,  
At five a full new set he shows.

The deep black spots will pass from view;  
At six years from the middle too;  
The second pair at seven years,  
At eight the spot each corner clears.

From middle "nippers" upper jaw,  
At nine the black spots will withdraw;  
The second pair at ten are bright,  
Eleven finds the corners light.

As time goes on the horsemen know  
The oval teeth three-sided grow;  
They longer get, project before,  
Till twenty—when we know no more.

## APPLES AND PEARS FOR SYDNEY.

In the opinion of the N.S.W. Chamber of Fruit and Vegetable Industries, far too many varieties of Apples and Pears are sent to the Sydney market. The Chamber recommends re-working that only the following varieties be sent to Sydney:—

**Apples:** Twenty Ounce (N.S.W.), Gravenstein, McIntosh Red (N.S.W.), Jonathan, Cleopatra, Delicious, Rome Beauty, Scarletts, Stayman Winesap (N.S.W.), French Crab, Scanny Smith, Crofton, Democrat, Sturmer and Yates.

**Pears:** Williams, Winter Cole, Packham's Triumph, B. Bosc, Winter Nelis, Glou Morceau, Josephine and Broom Park.

The gross value of fruit and vegetables in Canada in 1936 was £8,564,000, a decrease of £1,171,000 below 1935.

Lures for Codling Moths are advised—to determine peak flights and the best times for spraying. Use a 10 per cent. solution of malt vinegar, cider, apple vinegar, fermented Apple juice or molasses. Recharge once a week. A trace of bluestone will check excessive fermentation. Distribute 20 lure pots over one or two acres. Suspend in upper part of the tree.

In 1937, Australia shipped 3,839,729 bushels of Apples to the United Kingdom (portion of which was for transshipment to the Continent) and 769,750 cases of Pears.

Direct shipments to the Continent were: 505,429 cases of Apples, and 12,358 cases of Pears.

For control of green Peach aphid, spray with tar distillate 1-35 when trees are completely dormant.

Tests are being continued in the Goulburn Valley (Vic.) with parasites for the control of the destructive Oriental Peach Moth.

The value of Boron for curing "cork" disease in Apples was discovered by tree injection. The commercial method is that of soil dressings of 46 lb. borax or 30 lb. boric acid to the acre. Do not sprinkle within 2½ to 3 ft. of the base of the tree. Autumn application is preferable.

Green Manuring is now a fully recognised orchard practise. The N.S.W. Department of Agriculture recommends leguminous plants, such as clover, velvet beans and peas, as these are specially valuable on account of their power of obtaining nitrogen from the air—particularly for soils poor in nitrogen.

Field peas have largely replaced beans as a cover crop in some of the Murray Valley irrigation areas.

**Citrus Manuring:** In recent manurial tests with citrus in the Murray Valley (S. Australia) it was observed that 10 cwt. super. alone had no advantage over an unmanured plot, but when sulphate of ammonia or stable manure were added, the trees responded immediately. Nitrogen was the important factor in the manuring of citrus. Organic matter is needed and this can be supplied by turning under a cover crop. Even straw or old lucerne can be turned under to advantage.

## SCHOOLBOY HOWLERS.

We don't believe these are all the work of schoolboys, but that the girls perpetrated some of them. However, here goes:—

"A coolie is a movie with air-conditioning."

"A tangerine is a kind of one-sided banjo without a handle or strings, and with loose washers all around it that rattle when shaken."

"Countersigns are cards used in grocery stores to tell the price of eggs, and so on."

"Vermicelli is a section of big fiddles in a symphony orchestra that are played between the knees."

"Chaos is a name for the world as a whole."

"Hosiery is what carries the water to put out fires."

"An autograph is the plan of a motor car."

"A handicap is one that is easy on the head."

"When natives are going to a feast in Africa they beat their tum-tums."

## SOME RANDOM THOUGHTS.

The greater the obstacle the more glory in overcoming it.

I don't think much of a man who is not wiser to-day than he was yesterday.—Abraham Lincoln.



# Fruitgrowers' Associations Throughout Australia

## THE AUSTRALIAN APPLE AND PEAR EXPORT COUNCIL\*

President, J. B. Mills, 528 Collins-street, Melbourne; Vice-President, J. H. Astell, Spreyton, Tasmania; Secretary, R. E. Boardman, A.F.I.A., F.A.I.S. 528 Collins-street, Melbourne.

### Affiliated Associations—

**Tasmania:** Tas. State Fruit Board, Tas. Fruit Shippers' Committee, N. Tas. Fruit Shippers' Committee.

**Victoria:** Victorian Fruit Marketing Association.

**S. Australia:** S. Aust. Fruit Marketing Association.

**W. Australia:** W.A. Fruitgrowers' Association, W.A. Fruit Shippers' Committee.

**New South Wales:** N.S.W. Apple and Pear Export Association.

**Queensland:** Committee of Direction of Fruit Marketing.

**Australian Dried Fruits Association:** Sec., W. N. Sumner, Cornhill Chambers, Collins-street, Melbourne.

**Dried Fruits Export Control Board:** Sec., R. A. Marx, 100 Queen-street, Melbourne.

**Canned Fruit Export Control Board:** Sec., W. J. Adams, A.M.P. Buildings, 419 Collins-street, Melbourne.

**Australian Canning Fruitgrowers Association, Sec.,** W. J. Young, Ardmona.

**Federal Citrus Council:** Sec., A. W. Schwennesen, G. Kitchin-Kerr, Market Manager, Temple Court, Collins-st., Melbourne.

**Victorian Central Citrus Assn. Pty. Ltd.,** A. W. Schwennesen, General Manager, Temple Court, Collins-st., Melbourne.

## NEW SOUTH WALES.

**Fruitgrowers' Federation of N.S.W.**—Secretary, E. E. Herrod, 11 Bligh-street, Sydney.

**List of Affiliated Organisations, Together with Names and Addresses of Secretaries.**

**Arcadia:** E. L. Alexander, Arcadia, via Galston.

**Anangrove:** A. C. Birch, Annangrove, via Rouse Hill.

**Arding:** J. H. Yeomans, Arding, via Uralla.

**Armidale and Dist.:** W. Gantle, "Dangarsleigh," Armidale.

**Aylmerton (A.B.C.):** J. A. Rutcliffe, Aylmerton.

**Banana Growers Fed. Co-op. Ltd.:** A. Buckley, Box 31 Murwillumbah.

**Bathurst:** E. Ray, Caves, Roadside Mail, Bathurst.

**Batlow:** Agric. Bureau, P. E. Cook, Batlow.

**Batlow Packing House and Cool Stores Rual Co-op. Soc. Ltd.,** Batlow.

**Berrima and Dist.:** H. Richardson, Moss Vale.

**Binalong.** W. Arthur, Binalong.

**Brady's Gully.** J. D. Kirkness, Brady's Gully, via Gosford.

**Bulga:** L. C. Dodds, "Glenanne," Bulga.

**Bungunyah and Koraleigh:** O. M. Ward, Koraleigh P.O. (N.S.W.), via Nyah (Victoria).

**Buninyong:** C. J. Rowcliff, Old Dubbo-road, Dubbo.

**Camden:** G. V. Sidman, Camden.

**Cattai Dist.** N. G. Baur, Box 1, P.O., Windsor.

**Central Nth. Coast Tomato, Fruit and Veg. Co-op. Soc. Ltd.;** A. G. Henderson, Valla.

**Cessnock and Dist.:** R. McNamara, Mt. View, via Cessnock.

**Coff's Harbor:** V. E. Allen, "Korora," Coff's Harbor.

**Coomella:** C. Aubrey Calf, Dareton.

**Cordeaux:** F. A. March, Cordeaux River, Kambala Heights.

**Crookwell:** A. G. McDonald, Crookwell.

**Curlwaa:** P. L. Taylor, Curlwaa.

**Dooralong:** S. G. Richards, Dooralong, via Wyong.

**Dural:** R. Badger, Dural.

**East Kurrajong:** E. Case, Kurrajong.

**Elderslie:** A. F. Pankhurst, Elderslie, Braxton.

**Exeter:** P. C. Allen, Sutton Forrest.

**Fairfield and Dist.:** G. Lehmann, Water-street, Smithfield.

**Freeman's Reach-Glossodia:** A

**Krahe, Wilberforce.**

**Glenfield:** A. J. Blinman, Glenfield.

**Glenorie:** W. M. Jamieson, Boronia-road, Glenorie.

**Glossodia:** R. J. Jenkins, Glossodia, via Windsor.

**Gosford Co-op. Citrus Packing House Ltd.:** Box 10, Gosford.

**Gosford Bulk Loading Rural Co-op. Society Ltd.:** L. S. Dubois, Railway Goods Yard, Gosford.

**Goulburn:** T. Higgins, Box 116, Goulburn.

**Grafton Dist.:** B. C. Eggins, "Melrose," Kent-street, Grafton.

**Gressford:** G. N. Doyle, East Gosford.

**Griffith Prod. Co-op. Co. Ltd.:** Box 476, Griffith.

**Grose Vale:** J. F. Power, Grose Vale.

**Grose Wold:** H. C. Matheson, "Glenara," Grose Wold.

**Gunning:** G. E. Ardill, Gunning.

**Holgate:** R. Gale, Holgate, via Gosford.

**Hawkesbury and Nepean Fed. of Progress Assns.:** H. C. Matheson, "Glenara," Grose Wold.

**Hunter River and Dist.:** L. S. Scobie, Lotn, West Maitland.

**Inverell:** W. Ayland, Box 218, Inverell.

**Kellyville:** A. Bathgate, Kellyville.

**Kenthurst:** W. E. Campbell, Kenthurst.

**Kentucky Agric. Bureau, Co-op. Packing House Ltd.,** D. J. Toomey, Kentucky.

**Kentucky Rural Co-op. Soc. Ltd.:** Kentucky South.

**Kentucky F. G. A.:** J. Ballantyne, Hillcrest, Kentucky South.

**Kincumber and Avoca:** D. F. Gray, Avoca Beach, via Gosford.

**Kingsvale Rural Co-op. Soc. Ltd.,** Box 5, Young.

**Kootingal:** Mrs B. M. Sage, Kootingal.

**Kulnura:** A. A. Anderson, Kulnura, via Gosford.

**Kurrajong:** A. F. Vincent, Kurrajong.

**Lavington:** W. Fisher, Lavington.

**Lemongrowers' Association:** R. A. Findlay, Somersby, via Gosford.

**Liverpool and Dist.:** A. L. Marshall, Central-avenue, Chipping Norton.

**Lower Portland:** H. Lowe, Lower Portland.

**Maidens Brush:** R. More, Maidens Brush, via Gosford.

**Mangrove Mt.:** A. E. Lillicrap, Mangrove Mt., via Gosford.

**Maraylya and Dist.:** A. Wimble, Maraylya.

**March Agric. Bureau:** N. Griffith, "Melyra," March, via Orange.

**March Fruit Growers' Association:** E. Griffith, March, via Orange.

**Mardi:** L. T. Bray, Mardi, via Wyong.

**Maroota:** G. Bowie, Maroota, via Windsor.

**Matcham:** S. C. Aldridge, Roadside Mail, Oak-road, Matcham, via Gosford.

Mainura Rural Co-op. Soc. Ltd.: M. W. Johns, Box 30, P.O., Young.

Milthorpe: W. W. Moad, "Merlyn," Milthorpe.

Mitchell's Flat: G. Ernst, Mitchell's Flat, via Singleton.

Mt. Hunter: J. Childs, Mt. Hunter, via Camden.

Morisset and District: G. W. Brown, "Wonga Hill," Martinsville.

Molong: E. L. M. Parslow, Box 35, Molong.

Mt. Wilson and Mt. Irvine: G. Valder (Jnr.), "Noonoo," Mt. Wilson.

Mudgee: E. W. Roth, "Putta Bucca," Mudgee.

Narara: A. M. Midson, Deane-street, Narara.

Newcastle Dist.: A. Barrett, Cardiff.

Niagara Park: T. H. B. Cassell.

Niagara Park, via Gosford.

Nepean Dist. F.G.A.: M. G. Walker,

Emu Plains.

Nepean Dist. A. H. and I. Society:

C. H. Fulton, Box 17, Penrith.

Nullamanna: R. E. Gearing, Nullamanna.

North Richmond: G. L. Davies,

North Richmond.

Oakville: J. M. Hession, via River-

stone.

Oakdale: H. S. Kingsell, Oakdale.

Orange Prod. Rural Co-op. Soc.

Ltd., Box 171, Orange.

Orangeville: G. N. Mackie, Orange-

ville, via Camden.

Orchard Hills and Dist.: K. Base-

dow, Orchard Hills.

Ourimbah Bulk Loading Rural Co-

op. Soc. Ltd.: H. Freeburn, Ourimbah.

Parkesbourne: G. Brown, Parkes-

bourne.

Pennant Hills: H. B. Chrisholm,

New Line-road, West Pennant Hills.

Peas Ridge: A. J. Love, Peats

Ridge, via Gosford.

Penrose Agric. Bureau: C. Hebble-

white, Penrose.

Penrose Fruitgrowers' Rural Co-op.

Soc. Ltd.: J. E. Tickner, Penrose.

Pitt Town: A. B. Sanday, Pitt Town,

via Windsor.

Producers' Co-op. Distrib. Soc. Ltd.

(Fruit Section): Box 86c, P.O., Hay-

market.

Running Stream: E. Bartlett, "Mel-

rose," Capertee.

Saratoga: J. J. Bourke, Saratoga.

Sackville North: S. N. Mitchell,

Sackville North, via Windsor.

Shipley: R. S. Longton, Shipley, via

Blackheath.

Singleton: A. J. Taylor, Wark-

worth, via Singleton.

Somersby: D. K. Hutchinson,

Somersby, via Gosford.

St. Ives: G. A. Hunt, Kenthurst-

street, St. Ives.

Tahmoor: A. G. Miller, Tahmoor.

Tallong: H. Kettle, Tallong.

Tenterfield and Dist. Chamber of

Commerce (Fruit Section), Tenterfield.

Terrigal: T. W. Pedley-Smith,

"Eleso," Terrigal.

Tuggerah: F. C. Fripp, Tuggerah.

Tumby Umbi and Dist.: A. L. Boh-

ringer, Tumby Umbi, via Wyong.

Upper Colo: J. E. Forgham, Upper

Colo.

Uralla: W. D. Goode, Spring Creek,

Arding, via Uralla.

Warkworth: J. Greenhalgh, Wark-

worth, via Singleton.

Warner's Bay Dist.: A. J. Weikle-

john, Spear's Point, via Boolaroo.

Waterview Rural Co-op. Soc. Ltd.,

c/o T. Stele, Box 54, Young.

Wedderburn: R. F. Arundel, Wed-

derburn, via Campbelltown.

West Gosford: A. E. Walker,

Manns-road, Gosford.

Wilberforce: P. Bushell, Wilber-

force.

Wingello: C. Nurse, Fruit Section,

Wingello.

Wirimah Rural Co-op. Soc. Ltd.,

Wirimah, via Bendick Murrell.

Woonona and Dist.: F. Turnbull,

York-road, Bellambi.

Wiseman's Ferry and Dist.: C. Riley,

"Wanatta," Wiseman's Ferry.

Wyoming: R. W. Haynes, "Lyn-

hales," Narara.

Wyong Co-op. Citrus Packing House

Ltd., Wyong.

Yarramundi Falls: A. P. Luscombe,

Agnes Banks.

Yass: Yass.

Yarramalong: A. G. Waters, Yarra-

malong.

Yenda Producers' Co-op. Soc. Ltd.,

Box 19 Yenda.

Young Cool Stores Rural Co-op. Soc.

Ltd., Box 5, Young.

Young Fruitgrowers' Co-op. Soc.

Ltd., Box 5, Young.

Young Dist. Producers' Co-op.

Assn. Ltd., Box 5, Young.

N.S.W. Citrus Growers' Defence

Assn., Sec., H. Gordon Bennett, 12

O'Connell-street, Sydney.

FRUITGROWERS' ASSOCIATIONS

IN VICTORIA.

Bairnsdale Fruitgrowers' Associa-

tion (R. C. Matthews, Bairnsdale).

Bunyip, Garfield and Tynong Fruit-

growers' Association, Bunyip.

Burwood East Fruitgrowers, Asso-

ciation (G. C. Karnaghan, Blackburn).

Croydon Horticultural Association

(R. P. Menzies, Croydon).

Doncaster Fruitgrowers' Associa-

tion (G. S. Grover, Doncaster.)

Diamond Creek Fruitgrowers' Asso-

ciation R. M. Finlay, Diamond

Creek).

Drouin and Warragul Fruitgrowers'

Association (C. P. Nobelius, Warra-

gul.)

Dunolly and District Fruitgrowers'

Association, Betley.

Gippsland Fruit Marketing Asso-

ciation (W. H. Carne, Pakenham Up-

per.)

Gorae Fruitgrowers' Association

Gorae, via Portland.

Harcourt Fruitgrowers' Progress

Association Ltd. (C. Hull, Harcourt).

Harcourt Fruit Supply Company

(C. Wilson, Harcourt).

Northern Victoria Fruitgrowers'

Association (S. P. Cornish, Ardmona).

Orchardists' and Fruit Cool Stores'

Association of Victoria (H. J. Noo-

nan, Mitcham-road, Donvale).

Panton Hill Fruitgrowers' Associa-

tion, Panton Hill.

Quantong Fruitgrowers' Associa-

tion (C. H. Jost, Quantong).

Somerville Fruitgrowers' Associa-

tion (A. F. Telford, Somerville).

Southern Fruitgrowers' Association,

J. W. Aspinall, Box Hill.

Shepparton Irrigators' Association,

Shepparton.

Silvan Fruitgrowers' Association,

Silvan.

Southern Victoria Pear Packing Co.,

F. Moore, Blackburn.

Strathfieldsaye Fruitgrowers' Asso-

ciation, Strathfieldsaye.

Tyabb: Fruitgrowers' Association,

Tyabb.

United Berry Growers' Association

(J. M. Mitchell, Wandin.)

Victorian Central Citrus Associa-

tion, A. W. Scwennessen, manager, 360

Collins-street, Melbourne).

Victorian Fruit Marketing Associa-

tion (R. E. Boardman, A.F.I.A., 528

Collins-street, Melbourne.

Wandin District Fruitgrowers'

Association, Wandin North.

#### Northern Victoria.

Northern Victoria Fruitgrowers'

Association: Secretary S. P. Cornish,

Ardmona.

#### Affiliated Associations.

Ardmona: S. P. Cornish, Ardmona.

Bamawm Dist: P. Glasson,

Rochester.

Kyabram: G. F. Markham,

Kyabram.

Lancaster, T. Hughes, Lancaster.

Merrigum: S. Youlden, Merrigum.

Shepparton: V. E. Mills, Sheppar-

ton East.

Tatura: J. G. S. Rose, Tatura.

Toolamba: J. Agnew, Mooropna.

Tongala: D. E. Barry Wood, Ton-

gala East.



**VICTORIA.**

**Cool Stores' Associations.**

The Orchardists' and Fruit Cool Stores' Association of Victoria.—Secretary, H. J. Noonan, Donvale, "Affiliated stores and secretaries, as under:—

**Interstate—**

Ballow, N.S.W.: H. V. Smith, Ballow, N.S.W.  
Bender & Co., 100 Elizabeth-street, Launceston, Tas.

**Victoria—**

Ardmona Fruit Products, Mooropna.  
Blackburn: A. J. Noonan, Blackburn.  
Bunyip: L. Thomas, Bunyip.  
Burwood East: G. C. Karnaghan, Blackburn.  
Croydon: Robt. Langley, Kilsyth.  
Diamond Creek: R. M. Finlay, Diamond Creek.  
Doncaster East: W. Johnston, Cottage-street, Blackburn.  
Doncaster West: A. T. Tully, Main-road, Doncaster.  
Harcourt: H. M. McLean, Harcourt.  
Hastings and District: G. H. Sprague, Hastings.  
Kyabram Co-op. Fruit Preserving Co.: C. P. Crichton, Kyabram.  
Mount Waverley: David Peck, Tally Ho.  
Orchardists: G. S. Grover, Doncaster.  
Pakenham: H. Hamilton, 271 Collins-street, Melbourne.  
Portland: H. M. Williamson, Portland.  
Ringwood: J. G. Aird, Ringwood.  
Shepparton Fruit Preserving Co.: A. W. Fairley, Shepparton.  
Somerville: T. E. Butler, 486 Collins-street, Melbourne.  
Tyabb and District: Miss H. A. Foristal, Tyabb.  
Wantirna: F. J. Byrne, Bayswater.

**Private Stores—**

Box Hill Ice and Cold Storage Pty. Ltd.: C. G. Gill, Springfield-road, Blackburn.  
J. Brunning & Sons, Somerville.  
Elinora Orchards: A. P. Scott, Wheelers Hill.  
Graceburn Valley: A. E. Hocking, 31 Queen-street, Melbourne.  
R. E. Haysey, Narre Warren North.  
Heatherlea: D. Lipscombe, Croydon.  
A. E. Ireland, Beverley-street, Doncaster.  
W. Ireland, Gillies-st, Mitcham.  
V. Lawford, Springfield-road, Blackburn.

Lechte Bros., Mt. Waverley.  
W. Lipscombe, Croydon.  
S. J. Perry & Co., 364 Little Collins-street, Melbourne.  
Two Bays Nurseries Co., Moorooduc.  
W. C. Thomas & Sons Pty. Ltd., 57 William-street, Melbourne.  
Tacoma: F. Petty, Park-road, Mitcham.  
J. J. Tully, Victoria-street, Doncaster.  
Herb Petty: Main-road, Doncaster.  
F. C. Pyke, Heatherdale-road, Ringwood.

**VICTORIAN CENTRAL CITRUS ASSOCIATION PTY. LTD.**

422 Collins-street, Melbourne; General Manager, A. W. Schwennessen. Branches and Secretaries.

Murrabit District Citrus Assn.: J. H. Morton, Gonn Crossing, Via Kerang.  
Bamawm Citrus Assn. Ltd.: W. Chapman, Lockington.  
Lake Kangaroo Packing Co. Pty. Ltd.: H. S. Argyle, Mystic Park.  
Mildura & Districts V.C.C.A. Executive: A. E. Cameron, Box 194, Red Cliffs.  
Mildura Citrus Assn.: H. Wormwell, 15th-street, Irymple.  
Merbein Citrus Growers' Assn.: J. A. Rickard, Merbein.  
Shepparton Irrigators' Assn.: V. S. Mills, Shepparton.  
Wangaratta Citrus Assn.: J. P. Larkings, Wangaratta.  
Tongala Citrus Assn.: G. G. Wood, Miller-street, Tongala.  
Nanneella Citrus Assn.: J. Logan, Nanneella.  
Red Cliffs Citrus Assn.: G. Beith, Red Cliffs.  
Long Lake Citrus Assn.: C. V. Rees, "Bloomfields," Lake Boga.  
Curlwaa Co-op. Packing Society Ltd.: L. R. Strother, Curlwaa, N.S.W.  
Cobram Fruit Packing Co. Pty. Ltd.: L. F. Edwards, Cobram.  
Cain, W. N., Madowla Park, Picola.  
Rupert J. Watson, Perricoota, via Moama, N.S.W.  
P. Rossiter, Ngawe, Cobram.

The darkest hour comes before the dawn.

:: :: ::

A man should never be ashamed to own he had been in the wrong.

:: :: ::

Some thoughts always find us young, and keep us so. Such a thought is the love of the universal and eternal beauty.

**SOUTH AUSTRALIA**

**Murray Citrus Growers' Association.**

The Murray Citrus Growers' Co-op. Association (Australia) Ltd., has its headquarters at 52 Pirie Chambers, Pirie-street, Adelaide.

**Central Executive, 1937.**

President: Mr. A. P. Wishart, (Berri).

Members. Messrs. K. Dunstan and C. B. Williams (Waikerie); C. Plush and A. V. Mills (Berri); J. Price and H. C. Carne (Renmark); J. Swanbury (Moorook and Kingston); K. F. Dowding (Mypolonga); J. J. Odgers (Ramco); R. B. Sleth (Cadell); and H. R. Carter (Barmera).

**Management Committee, 1937.**

Chairman: Mr. A. P. Wishart.  
Members: Messrs. K. Dunstan, H. C. Carne, K. F. Dowding and C. B. Williams.

District Committees are established at Waikerie, Renmark, Berri, Mypolonga, Murray View, Moorook and Kingston, Ramco, Cadell and Barmera.

The General Secretary is Mr. N. H. Underwood.

S.A. Fruitgrowers' and Market Gardeners' Association, A. Stewart, Secretary, 288A Rundle-street, Adelaide, Box 43, P.O. Rundle-street.

**Affiliated Bodies—**

Barossa Fruitgrowers' Assn., Sec., Mr. A. J. Chapman, Nuriootpa.  
Fruitgrowers' and Market Gardeners Society Ltd.  
Torrens Valley Citrus Growers' Co-operative Society Ltd.

**WESTERN AUSTRALIA.**

**Fruitgrowers' Association.**

W.A. Fruitgrowers' Assn.: Joint Secretaries: H. W. Soothill, c/o Producers Markets Ltd., Perth, and B. Hickling, Mt. Barker.

W.A. Fruit Shippers Committee: Sec., C. H. Merry, Commercial Union Chambers, Perth.

**Affiliated Associations.**

Albany: Lange, V. A.  
Bridgetown: Doust, R. E.  
Boyp Brook: Treloar, H. W.  
Central Darling Range: Holland, J. C., Kalamunda.  
Capel: Turner, T. H.  
Chittering District: O'Neill, C., Lower Chittering.  
Donnybrook & Dist.: Moore, C. R., Brookhampton.



Denmark: Kingston, W. J.  
 Eastern Hills: Ilbery, T. H., 5  
 Swan-street, Guildford.  
 Harvey: Thew, J.  
 Manjimup: Chately, A. C.  
 Mt. Barker: Hickling, B.  
 Northern District Council: Soot-  
 hill, H. W., Box N1041, Perth.  
 South Suburban: E. H. Braine,  
 Kelmescott.  
 Spearwood Fruitgrowers' & Mar-  
 ket Gardeners' Assn.: Mr. Connolly,  
 c/o R. Piercy, 57 Henderson-street,  
 Freemantle.

### TASMANIA.

State Fruit Board: A. J. Honey,  
 Secretary, Bursary House, Hobart.  
 Tel. Hobart 4857.

Small Fruits Advisory Committee,  
 A. J. Honey, Sec., Bursary House, Ho-  
 bart. Tel. 4857.

#### Fruitgrowers' Associations.

Port Huon Fruitgrowers' Co-opera-  
 tive Association Ltd.: General man-  
 ager, J. P. Piggott, Davey-street, Ho-  
 bart.

Bagdad Fruitgrowers' Co-opera-  
 tive Association: A. Gillow, Bagdad.  
 Tamar Farmers and Fruitgrowers'  
 Association: E. O. Lucas, Loira, West  
 Tamar.

Tamar Valley Co-operative Com-  
 pany Ltd.: L. S. Taylor, Exeter.

Clarence Point Co-operative Or-  
 chard Company; Col. Oliver, Clarence  
 Point.

Derwent Valley Fruitgrowers' Co-  
 operative Co.: H. Morgan, New Nor-  
 folk.

Spreyton Fruitgrowers' Co-opera-  
 tive Company: A. Heath, Spreyton.

Tasmanian Farmers' Stockowners  
 and Orchardists' Association: A. J.  
 Honey, Bursary House, Hobart.

Tasmanian Fruitgrowers' Protec-  
 tive Assn.: Thos. Burnaby, Lyming-  
 ton.

### QUEENSLAND.

Committee of Direction of Fruit  
 Marketing, Turbot-street, Brisbane,  
 General Manager, B. Flewell-Smith;  
 Sub-manager, W. Ellison.

Affiliated registered Associations,  
 with names and addresses or secre-  
 taries, are as follows:—

#### Branches of the Committee of Direction:

Melbourne Office: A. V. Wilson,  
 Box 648E, G.P.O., Melbourne.

Sydney Office: B. Cox, Box 176,  
 Haymarket P.O. Sydney.

Rockhampton Office: S. McCullough,  
 Box 313, P.O., Rockhampton.

Bowen Office: R. A. Kelsey, Box  
 171, P.O., Bowen.

Townsville Office: Flinders-street,  
 Townsville.

Amamoor: F. Townsend, Amamoor.  
 Ambrose: R. Sinclair, Ambrose.

Aspley: W. F. King, Aspley.

Austinvile: V. Constant, Austinvile,  
 Mudgeeraba.

Bald Hills: W. E. Pearson, Bald  
 Hills.

Brackenridge: J. F. Gaskell, Brack-  
 enridge, via Sandgate.

Brookfield: A. McKay, Brookfield.  
 Byfield: J. Carroll, Byfield, via Yep-  
 poon.

Beerburum: W. J. Soares, Beer-  
 burum.

Birkdale: C. G. Davies, Birkdale.  
 Buderim Mt.: R. L. Miller, Buderim  
 Mt.

Burrum District Citrus Assoc.,  
 R. G. Reaney, Howard.  
 Burrum L.P.A.: H. G. Rowston, Tor-  
 banlea.

Beenleigh: W. F. Benfer, Hillside,  
 via Beenleigh.

Bowen Dist.: G. Pott, Bowen.

Bouldercombe: P. Dwyer, Boulder-  
 combe, via Rockhampton.

Bowling Green: C. C. Neilson, Ara-  
 mara.

Baffle Creek: F. Kleinschmidt, Rose-  
 dale, N.C.L.

Caboolture: H. Goeldners, Cabool-  
 ture.

Cedar Creek: A. J. Marks, Close-  
 burn.

Coochin Creek: Mrs. A. L. Neilsen,  
 Beerwah.

Cooloolabin: F. I. Peachey, Cooloo-  
 labin, via Yandina.

Cooran-Kin Kin. H. McDonald,  
 Cooran.

Cooroy. A. Gordon, Cooroy.

Curumbin: G. G. Greaves, Currum-  
 bin.

Dagun: P. Hicks, Dagun.

Dundowran: J. R. Stocks, Dundow-  
 ran, Nikenbah.

Eight Mile Plains: E. J. Hampson,  
 Eight Mile Plains.

Elimbah: E. Broughton, Elimbah.

Eudlo: T. Ellis, Eudlo.

Eumundi: A. W. Chapman, Eumun-  
 di.

Gympie: M. Buchanan, Goomboori-  
 an, via Gympie.

North Deep Creek and Corella: J.  
 Colley, Tamaree.

Mary's Creek: J. P. Jackson, Mary's  
 Creek, via Gympie.

Cedar Pocket: F. W. Johns, Cedar  
 Pocket, via Gympie.

Chatsworth: T. P. Reynolds, Chats-  
 worth, via Gympie.

Glastonbury: B. C. Betts, Glaston-  
 bury, via Gympie.

Goomboorian: W. Williams, Goom-  
 boorian, via Gympie.

Mooloo: W. Kirkwood, Junr., Moo-  
 loo, via Gympie.

Pie Creek: S. Adcock, Pie Creek,  
 via Gympie.

Lower Goomboorian: G. E. Elliott,  
 Lower Goomboorian, via Gympie.

Upper Veteran: V. B. Gray, Upper  
 Veteran-road, Gympie.

Scrubby Creek: J. P. Carey, Scrub-  
 by Creek, via Gympie.

Gayndah and Dist.: J. G. Acworth,  
 Box 38, Gayndah.

United Fruitgrowers Ltd.: A. Palk,  
 Glasshouse Mts.

Howard: E. Richards, Howard.

Jubilee Pocket: J. Campbell, Jubilee  
 Pocket, Cannon Valley, Proserpine.

Kallangur: F. W. Hansford, Kall-  
 langur, near Petrie.

Kandanga: K. L. Viles, Kandanga.

Kennedy-Meunga: J. C. Evans,  
 Carruchan, Kennedy, N.Q.

Kiamba: P. T. Smith, Kiamba, via  
 Yandina.

Lagoon Pocket: A. E. Louttit, La-  
 goon Pocket.

Landsborough: F. J. Salmon, Lands-  
 borough (Conondale L.P.A.— Ward  
 B.)

Mackay Dist.: A. Gibson, Box 120,  
 Mackay.

Macleay Island: W. J. Seymour,  
 Macleay Island, viz Redland Bay.

Meeandah: P. Adsett, P.O., Eaglen  
 Farm.

Moggill: R. Westerway, Junr., Mog-  
 gill.

Montville: J. Brown, Montville.

Mooloolah: W. J. Miller, Mooloolah.

Morayfield: C. Scudamore, Moray-  
 field.

Mt. Cotton: H. G. Holzapfel, Mt.  
 Cotton.

Mt. Mermaid: A. R. Vaisey, Upper  
 Brookfield.

Mt. Mee West: J. H. Jones, Mt. Mee  
 West, via D'Agular.

Marmor: W. J. Sands, Marmor.

Nambour: H. D. French, Nambour.

Flaxton: J. R. Perkins, Flaxton, via  
 Palmwoods.

Mapleton: A. A. Probert, Mapleton.

Nerang: K. R. Hack, Nerang.

North Arm: H. Mulcahy, North  
 Arm.

Ormiston: T. R. S. Fox, Ormiston.

Oxenford: A. K. G. Watt, Upper  
 Coomera.

Palmwoods: W. Scott, Palmwoods.

Pomona: H. V. Wood, Pomona.

Redland Bay: A. Prince, Redland  
 Bay.

Rochedale: N. Stewart, Rochedale,  
 Eight Mile Plains.



Russell Island: D. MacInnes, Russell Is., via Redland Bay.

Sarina: H. Jacobsen, Sarina, N.Q.  
South Tamborine: E. J. Jenyns, North Tamborine.

Sunnybank: D. M. Henderson, Sunnybank.

Tanby: R. F. Strange, Tanby.  
Tamborine: H. Curtis, North Tamborine.

Tinana: E. Copley, Tinana, via Maryborough.

Takura: J. H. Mungomery, Takura.  
Upper Brookfield: J. Phillips, Upper Brookfield.

Upper Kedron: E. J. Pickering, Ferny Grove.

Upper Mudgeeraba: G. F. Hinde, Upper Mudgeeraba.

Valdora: J. Leach, Valdora, via Yandina.

Victoria Point: E. Wilmott, Victoria Point.

Villeneuve: E. Axelsen, Villeneuve, Kilcoy L.

Wamuran & Dist.: H. S. Franks, Wamuran.

West Burleigh & Dist.: S. C. Ladds, West Burleigh.

Woodford: W. C. Brooks, Woodford.

Woombye: E. E. McNall, Woombye.  
Yarwun-Targinnie: L. M. Ferguson, Yarwun.

Yandina & Dist.: A. E. Haddrell, Yandina.

Yeppoon: A. E. Pascoe, Yeppoon.

#### (All Deciduous Associations.)

##### Stanthorpe L.P.A.'s.

Amiens: O. T. Jones, Amiens.

Applethorpe: H. G. Ludlow, Glen Niven.

Balandean: W. G. Newman, Balandean.

Bapaume: W. H. Bloxham, Bapaume, via Cottonvale.

Broadwater: M. Schneider, Box 93, Stanthorpe.

Cottonvale: L. C. Evans, Cottonvale.

Dalveen, A. G. White, Dalveen.

Eukey: L. G. Birch, Eukey, via Stanthorpe.

Glen Aplin: N. A. Collins, Glen Aplin.

Greenlands: J. Wylie, Spring Creek, Stanthorpe.

Mt. Tully: V. C. Sheppard, Mt. Tully, via Stanthorpe.

Pioneers: D. Ryan, Eukey, via Stanthorpe.

Pozieres: A. E. Pierce, Pozieres.

Severnlea: R. J. Bowden, Severnlea.

Stanthorpe: C. H. Lower, Box 121, Stanthorpe.

The Summit: A. D. Philp, The Summit.

Thorndale: L. Smith, Thorndale, via Stanthorpe.

Thulimbah: G. Woodbridge, Thulimbah.

Wyberba: J. R. Hickling, "Monrovia," Bald Mt., Wyberba, Southern Railway.

## Workers and the Fruit Industry

### Labour's Contribution.

#### A Popular Seasonal Activity.

#### Wages and Hours.

EVERY YEAR large numbers of seasonal workers migrate to the fruitgrowing areas to assist in harvesting Australia's fruit crops. Mostly these are experienced pickers on the orchards or packers in the peak periods of the canneries. For the time the country districts, in which fruit is the main crop, present a busy scene and temporary seasonal employment is sought by many workers who enjoy this work and the camaraderie that exists under such circumstances.

The conditions of employment, hours, wages, responsibilities, etc., are all covered by Arbitration Awards and health regulations and labor's contribution to the fruit industry is one that must be appreciated.

Besides the thousands finding seasonal employment, there are other thousands represented in the more permanent positions in fruit cool stores and packing houses in addition to the large army of growers scattered throughout the various States.

#### Hours and Wages.

These vary according to the class of work represented and are briefly covered by the following factors:—

**Fruit Stores:** The Storemen's and Packers' Wages Board determination covers all packing floors except those for dried fruits. The hours are 44 per week. Where employed less than a full 44-hour week, payment is made at one-and-third times up to 22 hours, balance at ordinary rates. If two holidays occur in a week, overtime is granted at one and half rates. The minimum wages for men are: Foremen in charge of 1 to 6 persons £4/6/3, in charge of 7 or more persons £5/0/9. Men, minimum wage £3/19/-; men working singly in a department or store £4/4/-. Women: Charge hand for 1 to 6 persons, £2/9/9, 7 or more persons £2/16/-; minimum wage for women over

18 years of age, £2/4/3. Women working singly in a department or store £2/6/6.

Hours: Between 7 a.m. and 6 p.m. weekdays and 7 a.m. to 12.30 p.m. Saturdays. All overtime at one and half rates.

The above rates applied to December 31, 1937, after which men's rates were raised by 1/- per week and women's by 7d. per week.

#### Fruit Pickers.

Other than for Apples, most of the picking is done for dried fruits and canned fruits and the awards are covered elsewhere under the paragraph dealing with dried fruits. All States vary slightly in rates, but all observe the 48-hour week.

#### Canneries.

Workers in the fruit canneries observe a 44-hour week. The minimum pay for men is £3/13/- and for women (over 18 years), £2/3/-. Overtime at time and one half applies in cases other than the usual working hours.

#### Dried Fruits.

In all States the 48-hour week is observed. The wages vary as follow:—In the Mildura area, adult men £3/15/-, adult women (over 18 years) £2/10/- per week. Those working by hourly rates receive 1/7½d. and 1/1½d. respectively. In all other parts of N.S.W., adult males £3/15/-, adult females £2/9/8 and hourly rate at 1/7½ and 1/1½ respectively. In all other parts of Victoria the weekly rate is £3/14/- for males and £2/9/2 for females with an hourly rate of 1/7½ and 1/0½ respectively. In South Australia the award is £3/12/- and £2/7/8 for males and females respectively and for hourly work 1/6½ and 1/0½.

#### Drivers and Carters.

In the Melbourne metropolitan area, at Geelong and Mildura, the following rates apply. One-horse vehicle £4/1/-, 2-horse vehicle £4/6/-. Motor vehicles: Up to 25 cwt. £4/6/-, over 25 cwt. up to 3 tons £4/10/-. Over 3 tons up to 6 tons £4/13/-. For large vehicles 1/- per ton capacity is allowed for over 5 tons. Drivers collecting money are allowed 1/- per week extra. The working hours are stated at 48 hours per week.

In all other fruit districts, than above, the wages rate is 3/- per week less.



# Dried Fruit Packing Sheds

**T**HE following is a list of Registered Packing Sheds operating under the Dried Fruits Boards in the several States.

## Victoria.

Aden Packing Co., Irymple.  
Ardmona Fruit Products Co-op. Ltd., Mooroopna.  
Aurora Packing Co. Pty. Ltd., Irymple No. 1 Shed.  
Aurora Packing Co. Pty. Ltd., Irymple No. 2 Shed.  
Aurora Packing Co. Pty. Ltd., Merbein.  
Aurora Packing Co. Pty. Ltd., Redcliffs.  
Australasian Jam Co. Pty. Ltd., 1 Garden-street, South Yarra.  
Bamawm Citrus Association Ltd., Lockington.  
Blake, W. A., Pty. Ltd., 252 City-road, South Melbourne, S.C.S.  
Chateau Mildura and Olivewood Pty. Ltd., Irymple.  
Chequer, W., Quantong.  
Co-operated D.F. Sales Pty. Ltd., Jaffcott-street, W. Melb.  
Desmond, J. J., Maccorm Packing Shed, Fairy Dell, Rochester.  
Henty Packing Pty. Ltd., Nyah West.  
Hungerford, E., & Sons, Piangil.  
Irymple Packing Pty. Ltd., Irymple and Merbein.  
Jamieson, C., Shepparton.  
Jenkins, Allan, Nyah.  
Lambert Products Pty. Ltd., Guildford-lane, Melbourne.  
McAlpine, J. & K., Pty. Ltd., Nyah.  
Martin, C., Bruarong, via Yackandandah.  
Mildura Co-op. Fruit Co. Ltd., Mildura and Merbein.  
Mildura Co-op. Fruit Co. Ltd., Irymple and Birdwoodton.  
Nieman and Derrick, Murrawee via Swan Hill.  
Nyah Fruitgrowers' Co-op. Co. Ltd., Vinifera, Nyah.  
Nyah Fruitgrowers' Co-op. Co., Nyah West.  
Overall, H., Quantong, via Horsham.  
Redcliffs Co-op. Packing Co. Ltd., Redcliffs. Sheds No. 1 and No. 2.  
Rosella Preserving and Manufacturing Co. Ltd., Cremorne Gardens, Richmond.  
Sarnia Packing Pty. Ltd., Mildura.  
Sterilizers Pty. Ltd., 194 Kerr-street, Fitzroy.  
Swallow & Ariell Ltd., Mildura.  
Tandaco Packing Co., Nyah West.  
Thwaites, J., Nyah.  
Woods, R. K., "Willowmere," Kyabram.  
Woorinen Fruitgrowers' Co-op. Ltd., Woorinen South.

## New South Wales.

Billing, U. S., Tapaulin.  
Brett Bros., Mt. Dispersion, via Euston.  
Coomella Packers Pty. Ltd., Dareton.  
Dinna Fruits Supply Co., Thomas-street, Ultimo.  
Ellis, T. N., 136 Chalmers-street, Sydney.  
Golden West Fruit Packing Co., 71 Sutton-street, Alexandria.  
Granger, J. C., Kingsvale.  
Johnson, W. H., & Co. Ltd., Bruce-street, Waterloo.  
Leeton Packing Co. Pty. Ltd., Leeton and Griffith.  
Mildura Co-op. Fruit Co. Ltd., Curlwaa and Pomona.  
M.I.A. Packing Co. Ltd., Griffith.  
Neville, Guy, Farm 54, Griffith.  
Producers' Packing Co., The, Valentine and Quay streets, Sydney, and Leeton.  
Riverina Welfare Farm, Yanco.  
Sainty, J., Herbert-street, Crows Nest.  
Sharrock Bros., Goodnight.

Walster, W. D., Kemp-street, Junee.  
Yenda Producers' Co-op. Society Ltd., Yenda.  
Young District Producers' Co-op. Association Ltd., Young.

## South Australia.

Angaston Fruit Growers' Co-op. Society Ltd., Angaston.  
Barmera Co-op. Packing Co. Ltd., Barmera.  
Bell, R. G., McLaren Flat.  
Berri Co-op. Packing Union Ltd., Berri.  
Cadell Fruit Packers Ltd., Cadell.  
Chateau, Mildura, and Olivewood Pty. Ltd., Renmark.  
Clare Fruit Packers Ltd., Clare, and Wilcox-street, Adelaide.  
Cole & Woodham Ltd., Renmark.  
Crowe & Newcombe, Renmark and Barmera.  
Crowe & Newcombe, Angaston and Port Adelaide.  
Dowding, Miss E. M., Langhorne Creek.  
Durieu, D. T., Renmark.  
Frankel, R. C. G., Glossop.  
Hall, A. E., & Co., Cadell.  
Holmes Bros., Kingston-on-Murray.  
Howard, A. H., Langhorne Creek.  
Hunter, H., Ramco.  
Ireland, A. G., Cobdogla.  
James, F. A., Berri.  
Jones, W. O., Waikerie.  
Kingston Co-op. Fruit Packing Union Ltd., Kingston-on-Murray.  
Lyrup Village Association, Lyrup.  
McLaren Vale Packers Ltd., McLaren Vale.  
Malcolm, A., Renmark.  
Mattiske, J. W., Executors of Estate, Angaston.  
Media Irrigation Pty. Ltd., Loxton.  
Merritt, F., Kingston-on-Murray.  
Monash Packing Co., Monash.  
Moorook Co-operators Ltd., Moorook.  
Murray Valley Fruit Co., Cadell.  
Mypolonga Co-op. Society Ltd., Mypolonga.  
Odgers, J. J., Ramco.  
Oliver, Mrs. R., McLaren Vale.  
Orchard Products Ltd., Blackwood.  
Plush, S., Nuriootpa.  
Price, J. H. M., Renmark.  
Pyap Co-op. Society Ltd., Pyap.  
Ramco Co-op. Ltd., Ramco.  
Redman, J., & Sons, Coonawarra.  
Renmark Fruit Growers' Co-op. Ltd., Renmark.  
Robson, Jarvis & Co., Hectorville.  
Sales, G. R., Renmark.  
Serwood Irrigation Co., Box 62, Loxton.  
Stanley Dried Fruits Association Ltd., Clare.  
Stevens, F. H., Renmark.  
Thorn, A., Angaston.  
Waikerie Co-op. Fruit Co. Ltd., Waikerie.  
Wood, G., Son & Co. Ltd., Port Adelaide.  
Wood, Son & Seary Ltd., Renmark and Berri.

## West Australia.

Boxall, A. R., Millendon.  
Cox Bros., Athgarvon, Coolup.  
Harrison, E., Baskerville.  
St. Albans Packing Shed, Upper Swan.  
Swan Settlers' Association Ltd., Herne Hill.  
Watts, A. E., Greenmount Packing Shed, Greenmount.  
West Swan Dried Fruit Packing Co., West Swan.



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